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# A Theoretical Study of the Effect of Various Assumptions Regarding the Use of Warrant Proceeds on Earnings-Per-Share Computations.

Julian Denis Smith

*Louisiana State University and Agricultural & Mechanical College*

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ASSUMPTIONS REGARDING THE USE OF WARRANT  
PROCEEDS ON EARNINGS-PER-SHARE COMPUTATIONS.**

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A THEORETICAL STUDY OF THE EFFECT OF VARIOUS ASSUMPTIONS  
REGARDING THE USE OF WARRANT PROCEEDS ON  
EARNINGS-PER-SHARE COMPUTATIONS

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
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Doctor of Philosophy

in

The Department of Accounting

by

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## ABSTRACT

During the 1960's warrants to purchase common shares were attached to the debt and equity securities of an increasing number of corporations in order to facilitate the sale or exchange of these securities. These warrants presented a potential problem to investors who purchased common shares of the issuing corporations.

The exercise of these warrants could result in the dilution of the corporations' book value per share, their earnings per share, and the market value of their shares as well as the voting power of the individual stockholders. In May, 1969 the American Institute of Certified Public Accountants (through the issuance of APB Opinion No. 15) adopted the treasury stock method for reflecting the potentially dilutive effect of warrants on earnings per share.

On a theoretical basis the treasury stock method has certain disadvantages. Although the treasury stock method makes no specific assumptions about the rate of return earned on warrant proceeds, the use of this method results in an earnings rate on warrant proceeds which is less than the earnings-price ratio of the corporation. Such a rate is unrealistically low for corporations with high price-earnings ratios and perhaps overly optimistic for corporations with low price-earnings ratios. In addition, the treasury stock method causes the earnings per share of corporations with warrants outstanding to vary inversely with the price of the corporations' common stock.

This study evaluates, on a theoretical basis, several methods of reflecting the potential dilution of warrants in the earnings-per-share

computations. The desirability of including the potentially dilutive effect of warrants in both primary and fully diluted earnings per share is also considered. Guidelines for the evaluation of the various methods of reflecting the potential dilution of warrants in the earnings-per-share computations are developed through an analysis of: (1) the attributes of earnings per share that investors perceive to be useful in the evaluation of common stocks, (2) the characteristics of warrants which might affect earnings per share, and (3) the problems encountered by the Accounting Principles Board in arriving at an acceptable method for handling warrants.

This thesis includes an in-depth study of the accounting, finance, and investment literature related to warrants and earnings per share as well as an intensive examination of the earnings-per-share files of the Accounting Principles Board of the American Institute of Certified Public Accountants. In addition, an analysis was made of the characteristics of warrants listed on the American Stock Exchange between 1950 and 1972.

This study concludes that a minimum of two earnings-per-share figures for companies with warrants outstanding should be provided to investors. These are: (1) earnings per average common share which excludes the potentially dilutive effect of warrants and (2) fully diluted earnings per share which includes an estimate of the potential dilution of earnings per share which might occur through the exercise of warrants.

This study further concludes that the most appropriate method of reflecting the potentially dilutive effect of warrants in fully diluted earnings per share is the operating rate of return method. This method assumes that the investment of the warrant proceeds will provide a return equal to the current rate of return on assets.

## Chapter 1

### INTRODUCTION

Accountants, aware of the limitations of net income for a single period, have been reluctant to include earnings-per-share statistics in the financial statements. This apprehension of accountants was expressed by Herman Bevis, a member of the Accounting Principles Board, as follows:

The earnings-per-share statistic for the current year or quarter is probably the most widely used of all financial statistics. . . . It is said that some make investment decisions after looking at this single earnings-per-share statistic, or at the price-earnings ratio based upon it.

This is frightening to those who take great pains to disclose important information about elements included and excluded in measuring net income for the year. . . . The alarm derives not from the development and use of per-share earnings figures. . . . The concern, rather, is the serious oversimplification of the information as to how it was derived. It is this amplifying information which puts it in perspective and which we must constantly remember is an integral part of the story told by earnings per share.<sup>1</sup>

This statement confirms earlier conclusions of the Committee on Accounting Procedure that it is ". . . undesirable to give major prominence to a single figure of earnings per share; . . ."<sup>2</sup> It is not surprising, therefore, that accounting literature, until 1966, contained

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<sup>1</sup>Herman W. Bevis, "Earnings per Share and the Need for Full Disclosure," The Journal of Accountancy, CXXI (February, 1966), 52.

<sup>2</sup>Committee on Accounting Procedure of the American Institute of Certified Public Accountants, Earnings per Share, Accounting Research Bulletin No. 49 (New York: American Institute of Certified Public Accountants, 1958), p. 29.

very little material on earnings per share. Apparently accountants hoped that by de-emphasizing earnings per share, investors would also.

But such was not the case. Interest in common stocks and other securities increased tremendously during the two decades from 1950 to 1970. In 1956 there were approximately 8,630,000 stockholders in the United States.<sup>3</sup> The number had increased to an estimated 31 million by 1970.<sup>4</sup> If the indirect holdings through pension funds, profit-sharing funds, variable annuities, and endowment trusts were considered, then an estimated 100 million Americans had some stake in the stock market by 1970.<sup>5</sup>

During the same period, merger activity increased considerably. There were 589 reported mergers in 1958. By 1967 the number had increased to an estimated 1,496.<sup>6</sup> With this increase in mergers, acquisition-minded companies began to design complex securities to meet their needs. These generally took the form of convertible bonds, convertible preferred stock, and stock warrants which were usually attached to debt or stock issues.

By 1966 two opposing forces related to earnings-per-share statistics existed. On the demand side, many new and unsophisticated investors--each with a relatively small investment--had appeared. Concern

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<sup>3</sup>Phillip L. West, "The Reporting of Earnings to Stockholders," The Journal of Accountancy, CVII (February, 1959), 27.

<sup>4</sup>"Change and Turmoil on Wall Street," Time, August 24, 1970, p. 53.

<sup>5</sup>Ibid.

<sup>6</sup>Samuel Richardson Reid, Mergers, Managers, and the Economy (New York: McGraw-Hill Book Company, 1968), p. 15.

over reporting to these investors was expressed by Phillip L. West, vice president of the New York Stock Exchange:

How does this broadening of share ownership affect us? I think it affects us in an extremely important way. The great mass of new investors are not going to be composed of security analysts. They are going to have a limited knowledge of a balance sheet and income statement. They will want company reports which are relatively easy to understand. But more than that, I feel sure that they will expect that earnings as reported by the companies are comparable, at least in the same industry. If their company earned \$2.00 a share and another company in the same industry earned \$2.50 a share, they will consider that this is so.<sup>7</sup>

On the supply side, complex securities with potential claims on the stockholders' equity were becoming more numerous. Financial statements, instead of being easy to understand, were becoming more complex. As a result new, unsophisticated stockholders were more likely to take refuge in a single earnings-per-share statistic.

A definite problem is that of computing and reporting earnings-per-share statistics of corporations with complex securities that are potentially dilutive<sup>8</sup> to the common equity. This problem is acute by virtue of the fact that many investors apparently rely heavily on earnings-per-share statistics while ignoring other important information in the financial statements.

This study is concerned with certain aspects of the problem of computing and reporting the earnings per share of corporations which have securities outstanding that are potentially dilutive to the common equity. Specifically, the purpose of this study is to evaluate, on a

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<sup>7</sup>West, op. cit., 28.

<sup>8</sup>For a definition of this and other terms related to warrants and earnings per share, see Definition of Terms, pp. 20-21.



theoretical basis, several methods of reflecting in earnings per share the potential dilution which might occur through the exercise of warrants. The means of accomplishing this objective are discussed in the remainder of this chapter.

#### THE NATURE OF THE PROBLEM

The Accounting Principles Board of the American Institute of Certified Public Accountants has issued two opinions which deal with the problem of calculating and reporting the earnings per share of corporations that have securities outstanding which are potentially dilutive to the common equity. APB Opinion No. 9 was issued in December, 1966 and subsequently revised by APB Opinion No. 15 in May, 1969. In APB Opinion No. 15, the Board required earnings-per-share statistics to be included on the face of the income statement so that, hopefully, users of the statistics would also evaluate the underlying financial data on which the statistics are based. For companies with complex capital structures, two earnings-per-share figures, "primary" and "fully diluted," are presented. "Primary earnings per share" is designed to reflect dilution by assuming the conversion or exercise of those potentially dilutive securities which are the equivalent of common stock. "Fully diluted earnings per share" reflects maximum potential dilution of current earnings per share on a prospective basis by assuming conversion or exercise of all securities having a dilutive effect on current earnings.

There are two distinct types of securities which may have a dilutive effect on earnings per share--convertible securities and warrants.

Both may derive a major portion of their value from their common stock characteristics. Because their characteristics as securities in their own right differ, convertible securities and warrants do not present the same problems in the earnings-per-share computation.

The calculation of the effect of the conversion of convertible securities on earnings per share presents little difficulty since these securities are convertible into a specific number of common shares in accordance with the terms of the issue. In computing the earnings per share of corporations with outstanding convertible debt, interest net of tax is added back to net income and the number of shares issuable is added to the common shares outstanding. For companies with outstanding convertible preferred stock, the dividends applicable to the stock are included in earnings and the number of shares issuable is added to the common shares outstanding. The classification of convertible securities as common stock equivalents for purposes of computing primary earnings per share does present a problem. This problem arises because convertible securities have an investment value which is not related to their common stock characteristics. The Accounting Principles Board did considerable research on this problem of classification prior to the release of APB Opinion No. 15.<sup>9</sup> The release of APB Opinion No. 9 and APB Opinion No. 15 has also stimulated research by others.<sup>10</sup>

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<sup>9</sup>This statement is made on the basis of a review of the earnings-per-share files of the Accounting Principles Board.

<sup>10</sup>See, for example, Harold Bierman, Jr. and Ernest Liu, "The Computation of Earnings per Share," The Accounting Review, XLIII (January, 1968), 62-67; Werner G. Frank and Jerry J. Weygandt, "Convertible Debt and Earnings per Share: Pragmatism vs. Good Theory," The Accounting

No classification problem exists in regard to warrants because they have no cash yield and therefore no investment value other than that related to their common stock characteristics. Warrants are always classified as common stock equivalents when their effect on earnings per share is dilutive. As a consequence, the potentially dilutive effect of warrants on earnings per share is included in both the primary and fully diluted computations under the guidelines of APB Opinion No. 15. An investor, therefore, is denied an estimate of the magnitude of the potential dilution of warrants on earnings per share. The question of whether warrants should be classified as common stock equivalents for purposes of computing primary earnings per share will be considered in this study.

If warrants are assumed to be exercised for purposes of calculating either primary or fully diluted earnings-per-share, some assumption must be made as to the return which will be earned on the proceeds. A greater proportion of the Accounting Principles Board's research was devoted to the classification problem associated with convertible securities than was devoted to the earnings-on-proceeds problem of warrants. In addition, none of the published research on earnings per share deals with the problem. Since different assumptions may have materially different effects on earnings per share when the number of warrants outstanding is significant in relation to the number of shares outstanding, this study will concentrate on this aspect of the earnings-per-share problem.

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Review, XLV (April, 1970), 280-289; Thomas R. Hofstedt and Richard R. West, "The APB, Yield Indices, and Predictive Ability," The Accounting Review, XLVI (April, 1971), 329-337; and Werner G. Frank and Jerry J. Weygandt, "The APB, Yield Indices, and Predictive Ability: A Reply," The Accounting Review, XLVI (April, 1971), 338-341.

## PURPOSE OF THIS STUDY

The Accounting Principles Board considered four basic methods of treating outstanding warrants in the computation of earnings per share before it decided on the treasury stock method. These were:

- I - equivalent shares considered as outstanding - no credit given for earnings on potential proceeds
- II - equivalent shares considered as outstanding - credit given for earnings on potential proceeds:
  - (a) - at some earnings rate determined from data independent of the corporation's own rate of return
  - (b) - at a rate based on the earnings of the corporation in relation to the current market price of its common stock
- III - shares outstanding considered to include shares under option reduced to a portion based on the relationship of the exercise price of the warrant and the current market price of the common stock - also known as the purchase of treasury stock method
- IV - shares outstanding considered to include shares under option reduced to a portion based on the relationship of the market price of the warrant and the current market price of the common stock - the Graham-Dodd formula.<sup>11</sup>

In analyzing these methods, the Board apparently did not develop a consistent set of criteria. In early drafts prepared in July and August, 1968, warrants were not considered common stock equivalents at the time of issuance unless the market price of the optioned stock was 150 percent of the exercise price. If warrants were not classified as common stock equivalents at the time of issue, they would not

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<sup>11</sup>Letter from Frank T. Weston, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, to Philip L. Defliese, Chairman, Subcommittee on Convertible Debt of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 20, 1969.

subsequently be so classified until the market price of the stock was 200 percent of the exercise price. After being designated common stock equivalents, they remained in that classification until the market value of the stock obtainable was equal to or less than the exercise price.

During this period the Board felt that the assumption as to the use of funds should be consistent with the company's financial policy. In the absence of such a policy, the Board preferred: (1) the rate of interest being paid on outstanding debt, net of tax effect, (2) an assumed investment in government or similar obligations, net of tax effect, or (3) the assumed use of funds to purchase stock of the issuing company at current prices.

The major criterion at this stage appeared to be interperiod and intercompany comparability of earnings per share because few warrant issues would be classified as common stock equivalents under these guidelines. At the same time, however, warrants classified as common stock equivalents would cause a lack of intercompany comparability because of the wide latitude of options permitted the companies on the assumed use of proceeds. However, this criticism may not be valid because the presumption is that management would use the funds in accordance with sound financial policies. Nevertheless, showing the maximum dilutive effects of warrants did not appear to be a criterion in the early drafts.

Further lack of consistency in evaluation of the methods is evidenced by the changes made in subsequent drafts. For example, in the November 6, 1968 exposure draft on earnings per share, the treasury stock method was rejected as being inappropriate due to ". . . the number of

estimates, restrictions, and other factors involved."<sup>12</sup>

In the remaining drafts and the final opinion, the treasury stock method was reinstated in a more dilutive form by the elimination of the percentage test to determine common stock equivalency. Thus the criteria appeared to shift toward showing greater dilution. Intercompany comparability of earnings-per-share figures was also improved through the elimination of alternate assumptions as to the use of funds. The treasury stock method, however, does not offer the same degree of comparability as certain other alternate assumptions because earnings per share as computed under this procedure will vary inversely with the price of the common stock. This specific point is discussed in depth in Chapter 5 of this study.

Perhaps one reason for the adoption of the treasury stock method was that the Securities and Exchange Commission favored it. Andrew Barr, in commenting on the November 6, 1968 exposure draft, wrote: "We believe that the assumed use of funds to purchase treasury stock is an appropriate basis and that it will produce the most reliable results in many instances."<sup>13</sup>

On the other hand, committees from two of the organizations most concerned with earnings per share were opposed to the treasury stock

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<sup>12</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 12. (Mimeographed.)

<sup>13</sup>Letter from Andrew Barr, Chief Accountant of the Securities and Exchange Commission, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 7, 1969.

method. In a letter to J. S. Seidman, a member of the Accounting Principles Board, Frank T. Weston, also a member of the Accounting Principles Board, demonstrated that the treasury stock method assumes a rate of return on the proceeds from warrants which is approximately equivalent to the reciprocal of the price-earnings ratio. Thus, in 1968, Ford Motor Company, with a price-earnings ratio of 65, would have an earnings rate of 1.5 percent on warrant proceeds. U. S. Steel, with a price-earnings ratio of 12, would have an earnings rate of 8.5 percent.<sup>14</sup> David Norr, Chairman of the Financial Accounting Policy Committee of The Financial Analysts Federation, stated that this letter ". . . seemed most impressive in destroying the treasury stock method."<sup>15</sup>

The Corporation Finance Committee of the Investment Bankers Association of America commented:

The "treasury stock" method is faulty because:

- (a) it assumes an unlikely event (corporations rarely retire common stock with warrant proceeds),
- (b) it assumes an illegal event (SEC anti-manipulative rules),
- (c) it assumes an impractical event (substantial market purchases of common stock would increase price), and
- (d) it produces a more favorable result than that likely to occur (most corporations would not immediately earn equal return on new equity funds as old).<sup>16</sup>

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<sup>14</sup>Letter from Frank T. Weston, member of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, to J. S. Seidman, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated March 28, 1969.

<sup>15</sup>Letter from David Norr, Chairman of the Financial Accounting Policy Committee of The Financial Analysts Federation, to Frank T. Weston, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated April 3, 1969.

<sup>16</sup>Memorandum from the Corporation Finance Committee of the Investment Bankers Association of America to the APB Subcommittee on Convertible Securities of the American Institute of Certified Public Accountants, dated February 19, 1969.

The preceding discussion suggests that the formulation of an appropriate method of reflecting warrants in the earnings-per-share computation requires a set of criteria for evaluating the various alternatives. These criteria should be derived from the attributes of earnings-per-share statistics that investors appear to use in valuing common stocks and from the characteristics of warrants which affect the earnings-per-share statistics. The purpose of this study is to evaluate, on a theoretical basis, several methods of reflecting warrants in the earnings-per-share computation. The desirability of including the potentially dilutive effect of warrants in both primary and fully diluted earnings per share will also be considered. This evaluation will be based on guidelines developed throughout this study. Based on this evaluation recommendations will be made for the computation of earnings per share of companies with warrants outstanding.

#### IMPORTANCE OF THIS STUDY

Warrants were not considered residual securities under APB Opinion No. 9. They might, however, be included in pro forma earnings per share if their exercise would result in material potential dilution. No explanation has been offered in the literature for the Accounting Principles Board's failure to designate warrants as residual securities. Perhaps the Board felt that the volume of warrants being issued at the time the opinion was written was not material to the earnings-per-share



problem. During 1966, for example, only 12 companies issued warrants.<sup>17</sup> At the same time, only 19 warrants were being traded on the American Stock Exchange.

Warrants were considered common stock equivalents in APB Opinion No. 15, which was issued in May, 1969. The decision to include warrants was probably influenced by their increased usage, especially as a merger currency and as distributions to stockholders in lieu of dividends. In 1968, 65 companies issued warrants, followed by 123 companies in 1969.<sup>18</sup> Warrant trading also increased on the American Stock Exchange to 42 issues in 1969. There are approximately 62 issues being traded in 1974.

Equally as important as the increased usage of warrants is the extent of the potential dilution to the common stockholders. Royer, in a study of 167 warrant issues offered between 1950 and 1969, found a potential dilution of 10 percent or more in approximately one third of the cases.<sup>19</sup> He defined dilution for this purpose as the ratio of the optioned shares to the sum of shares outstanding and the optioned shares on the issue date of the warrants.

Individual cases point out how serious the problem can be. For example, as of December 31, 1970, National General Corporation had

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<sup>17</sup>Investment Dealers' Digest, Corporate Financing Directory (Section 11) (New York: Investment Dealers' Digest, Inc., 1967), cited in Pierre Royer, "Long-Term Warrants as Financing Instruments," (unpublished Doctor's dissertation, The University of Michigan, 1970), p. 15.

<sup>18</sup>Ibid.

<sup>19</sup>Pierre Royer, "Long-Term Warrants as Financing Instruments," (unpublished Doctor's dissertation, The University of Michigan, 1970), p. 196.

warrants outstanding for the purchase of approximately 10,858,000 of its shares. Outstanding common shares were only 4,977,000. In August, 1968, LTV Aerospace Corporation issued \$40 million of subordinated debentures with detachable warrants to purchase 1,200,000 shares of its common stock. This amounted to approximately 70 percent of the common shares outstanding. The evidence suggests that warrants will become even more significant in the earnings-per-share problem as their usage increases.

The Accounting Principles Board in APB Opinion No. 15 adopted the treasury stock method of reflecting the use of proceeds that would be obtained upon exercise of warrants. A review of the correspondence in the Board's earnings-per-share files and of the various drafts of the opinion indicates much indecision and controversy over its adoption.

Of the three members of the Accounting Principles Board dissenting to the issuance of APB Opinion No. 15 and five members assenting with qualifications, six objected to the treasury stock method. The extent of the dissents on the Board suggests that additional research is needed to determine the effect on earnings per share of various assumptions regarding the rate of return earned on the proceeds from the exercise of warrants. This is further reinforced by the previously cited opposition of committees from the two leading organizations most concerned with using earnings per share--The Financial Analysts Federation and the Investment Bankers Association of America.

#### DEVELOPMENT OF THE PROBLEM

The critical problem that arises from the assumption that warrants have been exercised for purposes of computing earnings per share is that

of attributing earnings to the warrant proceeds. Several alternative assumptions as to the use of warrant proceeds, each with a different effect on earnings per share, have been cited. A set of criteria for evaluating these alternatives is needed in order to determine the most appropriate method of reflecting the potentially dilutive effect of warrants in earnings per share. This study proposes to derive these guidelines from the attributes of earnings per share that investors appear to use and from the characteristics of warrants that are important to the earnings-per-share computation. A discussion of these two factors follows.

Attributes of Earnings per  
Share Used by Investors

A premise of this study is that investors use the trend and the variability of the trend in earnings per share as one of the factors in determining the price-earnings multiple with which they evaluate common stock prices. Ceteris paribus, they place a higher multiple on stocks which exhibit a high growth rate and low variability in earnings per share. The following example demonstrates this point:

| <u>Earnings per<br/>Share</u> | <u>Dr. Pepper</u> | <u>Royal Crown Cola</u> |
|-------------------------------|-------------------|-------------------------|
| 1970                          | \$0.61            | \$0.96                  |
| 1969                          | 0.50              | 0.61                    |
| 1968                          | 0.45              | 0.92                    |
| 1967                          | 0.39              | 0.86                    |
| 1966                          | 0.32              | 0.95                    |
| Average, 1966-1970            | \$0.45            | \$0.86                  |
| Average price, 1970           | \$18.75           | \$14.88                 |
| Price-earnings ratios         |                   |                         |
| On 1970 earnings              | 30.7              | 15.5                    |
| On average 5-year<br>earnings | 40.4              | 17.3 <sup>20</sup>      |

While other factors influence expectations, the wide discrepancy in the price-earnings ratios of two companies engaged in similar operations must be attributable in part to the trend and variability of their earnings per share.

Management is also aware of this emphasis that investors place on the trend and variability of earnings per share. Chock Full o'Nuts in its 1964 annual report shows earnings per share (as adjusted) for the years 1961-1964 as 60 cents, 61 cents, 60 cents, and 62 cents, respectively. But the president, in his letter, added the following postscript:

P.S. I would like to point out that we deferred our costs of introducing new products in the years 1961, 2, and 3.

Had we written these expenditures off in the years in which they occurred, we would have shown a very good growth pattern--

42¢ a share for the year ending July 31, 1961

50¢ a share for the year ending July 31, 1962

67¢ a share for the year ending July 31, 1963

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<sup>20</sup>Compiled from Moody's Handbook of Common Stocks: Second 1971 Edition (New York: Moody's Investors Service, Inc., 1971), pp. 291, 803.

74¢ a share for the year ending July 31, 1964<sup>21</sup>

Bernstein, in commenting on this example, states: "In both instances, the average earnings per share for the four years are about 60¢, but the different trends displayed would undoubtedly cause significantly differing market evaluation of the company's stock."<sup>22</sup>

These examples also illustrate the effect of the base year upon the earnings trend, particularly when the earnings are highly variable. For example, selection of 1966 as the base year for computing the compound annual growth rate of Royal Crown Cola would result in a much lower growth rate than if 1967 were selected. Similarly, Chock Full o'Nuts' growth rate would be significantly different had the company chosen to expense new product costs in the years in which they were incurred.

#### Characteristics of Warrants

Another premise of this study is that warrants are the equivalent of common stock from the date they are issued because all of their value is derived from their common stock characteristics. This value consists of two elements: a tangible value and a premium value. The price of a warrant will fluctuate between its tangible value as a minimum and the price of the related common stock as a maximum. The warrant premium is highest when the common stock is selling at or below the exercise price

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<sup>21</sup>1964 Annual Report: Chock Full o'Nuts Corporation, cited by Leopold A. Bernstein, Accounting for Extraordinary Gains and Losses (New York: The Ronald Press Company, 1967), p. 49.

<sup>22</sup>Leopold A. Bernstein, Accounting for Extraordinary Gains and Losses (New York: The Ronald Press Company, 1967), p. 49.

because the market recognizes the leverage potential of the warrant. As the price of the common advances, the leverage potential declines because of the increasing tangible value of the option. As a result, the premium declines and the warrant price approaches its tangible value. The premium is also affected by the expiration date of the warrant. As the expiration date approaches, the premium declines and the warrant price approaches its tangible value.

Warrants are bought to be traded rather than exercised. Since arbitrageurs prevent warrant prices from falling below their tangible values, an investor desiring common stock would find it cheaper to buy the stock directly. It is the option not to buy common stock which gives warrants leverage. As a result, warrants are usually not exercised until close to their expiration date.

These characteristics of warrants have two implications for earnings-per-share computations involving warrants:

1. Warrants are always common stock equivalents because both their tangible value and their premium value are dependent upon the underlying common stock price and/or expectations about that price.

2. Since warrants are not bought to be exercised and are usually not exercised until shortly before their expiration, the price of the warrant or of the common stock bears no relationship, at any given time, to the imminence or probability of exercise nor to the ultimate dilution in earnings per share.

By their nature, warrants which are exercised always result in dilution to existing stockholders in the sense that the holders of warrants are issued common stock at less than the current market price.

This is true because warrants are never exercised unless the market price of the stock exceeds the exercise price of the warrant. This type of dilution resulting from the difference between the option price and the market price on the exercise date is not reflected in the financial statements. Such dilution is in the nature of an opportunity cost representing income foregone by rejecting an alternative. Accountants record events resulting from alternatives selected rather than those rejected because of the difficulty in accumulating data on what might have been.

The dilution, if any, which will ultimately be reflected in earnings per share is caused by an increase in the number of shares issued through the exercise of warrants that is proportionately greater than the increase in earnings that results from the investment of the funds received. Dilution with which the accountant is concerned, therefore, is a function of the common shares outstanding, the shares issuable upon the exercise of warrants, the earnings on capital provided by the existing common stockholders, and the earnings on the proceeds of warrants exercised.

#### METHODOLOGY

Finance, investment, and accounting literature will be surveyed to determine how investors use earnings per share and to determine the characteristics of warrants which affect the earnings-per-share computation. In addition, the characteristics of all warrants listed on the American Stock Exchange during the period from 1950 to 1972 will be analyzed. Based upon these desired information characteristics, guidelines for computing earnings per share when warrants are outstanding

will be developed. These guidelines will be employed in evaluating the various earnings-per-share statistics which result from the use of different assumptions in regard to the earnings on warrant proceeds. From this evaluation will come recommendations for computing the earnings per share of companies with warrants outstanding.

Much of the data for this study will come from current finance and accounting journals and books. The Wall Street Journal, The Wall Street Journal Index, Moody's Industrial Manual, Standard and Poor's Corporate Records, Value Line Investment Survey, and other financial services are the data sources for the individual companies being analyzed. Data will also be secured from the annual reports of specific companies and from Form 10-K Annual Report filings with the Securities and Exchange Commission. In addition, copies of much of the correspondence in the earnings-per-share files of the Accounting Principles Board of the American Institute of Certified Public Accountants are available.

#### LIMITATIONS

This study does not attempt to answer the normative question, "Should investors use earnings per share in evaluating common stocks?" A fundamental assumption is that investors do use earnings per share in evaluating common stocks.

APB Opinion No. 15 is concerned with the effect of all types of potentially dilutive securities on earnings per share. This study is limited to a consideration of the effects of warrants on the earnings-per-share computations. The warrants studied are those listed on the American Stock Exchange during the period from 1950 to 1972. This



limitation is necessary because warrant prices are required in the study. No inferences can be made about warrants which are not traded because their characteristics may be substantially different from the population under study.

#### DEFINITION OF TERMS

The definitions which follow are of terms associated with warrants and earnings per share:

Common stock equivalent. A term used by the Accounting Principles Board in APB Opinion No. 15 to designate a security which, because of its terms or the circumstances under which it was issued, is in substance equivalent to common stock. Warrants are designated common stock equivalents under the treasury stock method if the average market price of the related common stock exceeds the exercise price.

Dilution (Dilutive). A term used by the Accounting Principles Board in APB Opinion No. 15 to indicate a reduction in earnings per share resulting from the assumption that convertible securities have been converted or that options and warrants have been exercised or other shares have been issued upon the fulfillment of certain conditions. Under the treasury stock method, warrants are dilutive when the average or current market price of the related common stock exceeds the exercise price.

Earnings per share. As defined by the Accounting Principles Board in APB Opinion No. 15, it is the amount of earnings attributable to each share of common stock. It may be used without qualification only when no potentially dilutive securities or other agreements providing for contingent issuances of common stock are outstanding.

Exercise price. As used in this study, the amount that must be paid for a share of common stock upon exercise of a warrant. Depending upon the terms of the warrant agreement, the amount may be paid in cash or by surrender of other securities at their par value.

Fully diluted earnings per share. As defined by the Accounting Principles Board in APB Opinion No. 15, the amount of current earnings per share reflecting the maximum dilution that would have resulted from conversions, exercises, and other contingent issuances that individually would have decreased earnings per share and in the aggregate would have had a dilutive effect.

**Intrinsic value.** The present worth of a warrant assuming immediate exercise of the option privilege. It is calculated by subtracting the exercise price from the market price of the related stock. The term is synonymous with tangible value and theoretical value.

**Premium value.** The value investors are willing to pay for the leverage a warrant offers. It is calculated by subtracting the warrant's tangible value from its market price. For comparative and analytical purposes, the premium is often expressed as a percentage of the market price of the optioned stock.

**Primary earnings per share.** As defined by the Accounting Principles Board in APB Opinion No. 15, the amount of earnings attributable to each share of common stock, including common stock equivalents.

**Security.** As defined by the Accounting Principles Board in APB Opinion No. 15, the evidence of a debt or ownership or related right. Warrants are securities under this definition.

**Tangible value.** The present worth of a warrant assuming immediate exercise of the option privilege. It is calculated by subtracting the exercise price from the market price of the related stock. The term is synonymous with intrinsic value and theoretical value.

**Theoretical value.** The present worth of a warrant assuming immediate exercise of the option privilege. It is calculated by subtracting the exercise price from the market price of the related stock. The term is synonymous with intrinsic value and tangible value.

**Treasury stock method.** The method designated by the Accounting Principles Board in APB Opinion No. 15 for recognizing the use of proceeds that would be obtained upon the exercise of options and warrants in computing earnings per share. It assumes that the proceeds would be used to purchase common stock at average or current market prices.

**Warrant.** A negotiable security giving the holder the right to purchase a designated number of shares of common stock at a definite price during a stipulated time period. For purposes of this study, this definition excludes employee stock options and warrants to purchase securities other than common stock.

## ORGANIZATION OF THE STUDY

Chapter 2 will discuss what use investors make of earnings-per-share statistics. Accounting, finance, and investment literature will be surveyed in order to determine the attributes of earnings per share that investors perceive to be important.

Chapter 3 will be devoted to an analysis of the characteristics of warrants listed on the American Stock Exchange during the period from 1950 to 1972. The amount of potential dilution and of actual dilution, the contractual provisions, the exercise ratio, the life span, the reasons for issue, and other characteristics will be discussed.

In Chapter 4 the concepts of residual securities and common stock equivalents will be examined. The difficulties encountered by the Accounting Principles Board in the promulgation of APB Opinion No. 15 will be studied through a review of the Board's earnings-per-share files. A knowledge of these difficulties will be helpful in formulating the guidelines for the earnings-per-share computations of companies with warrants outstanding.

The guidelines for earnings-per-share calculations involving warrants will be developed in Chapter 5. These guidelines will be employed to evaluate several methods of computing the earnings per share of companies with outstanding warrants. Finally, based on this evaluation, a recommended method of computing earnings per share will be developed.

Chapter 6 summarizes the major points developed throughout this study and sets forth the primary conclusions drawn from this research.

## Chapter 2

### ATTRIBUTES OF EARNINGS PER SHARE USED BY INVESTORS

Since a basic premise of this study is that investors and security analysts use earnings per share extensively in common stock valuation, a knowledge of how the statistics are used is essential to establishing the attributes of earnings per share that are important to investors. From these attributes, guidelines for computing the earnings per share of companies with warrants outstanding can be formulated.

These objectives can be accomplished through a survey of accounting, investment, and finance literature. First, the circumstances surrounding the origin of the basic valuation model predominantly used today by practicing analysts--capitalization of earnings--is investigated. The failure of accountants to provide adequate income statements and their attitude toward earnings-per-share statistics were influences which contributed to the development of this model.

The basic methods of common stock analysis are also examined to discover those methods which utilize earnings-per-share data. Next, significant research related to common stock valuation is analyzed for any implications related to earnings per share. The emphasis of this study, however, is on how earnings per share is actually used in valuing securities and not on the manner in which it should be used. Finally, after determining how earnings per share is used in security analysis, the attributes important to investors are formulated.

## HISTORICAL BACKGROUND OF EARNINGS PER SHARE

Prior to the early 1920's, the purchase and sale of common stocks, with few exceptions, was considered to be a speculative activity. The few stocks qualifying as investments were those with a long record of stable dividends and earnings with average prices close to their par or asset values. Such stocks were considered similar to junior grade bonds and were evaluated in much the same manner--principally on the basis of a balance sheet analysis.

During this period, earnings-per-share statistics were not cited in financial publications. Instead, in addition to absolute amounts, earnings were reported as a percentage of the aggregate par value of common stock outstanding. The New York Times Annalist, for example, reported the earnings of United States Steel Corporation for the first half of 1913 as follows: "The balance after preferred dividends, \$33,696,527, is equal to 6.63 percent on \$508,302,500 common stock for the six months."<sup>1</sup> In commenting on Packard Motor Company's earnings, the same publication stated: "The Packard Motor Company, which earned 36.6 percent on its \$5,000,000 common stock during the 1912 fiscal year ended August 31, has paid no common dividends for three years, but has retained the cash for working capital."<sup>2</sup>

Investors changed their attitude toward common stocks during the early 1920's and accepted common stocks as legitimate investments. With this change of attitude, the financial press began publishing

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<sup>1</sup>The New York Times Annalist, August 4, 1913, p. 138.

<sup>2</sup>The New York Times Annalist, January 20, 1913, p. 30.

earnings-per-share statistics. The circumstances which led to the acceptance of common stocks as investments, the early importance of earnings per share in the evaluation of common stocks, and the accountant's attitude toward earnings per share during this period are discussed in this section.

### The Acceptance of Common Stocks as Investments

In 1924, Edgar Lawrence Smith planted the seeds of what has been called the new era of common stocks.<sup>3</sup> Smith's theory was that a well-diversified investment in common stocks, if held for a long period, would give a better return than an investment in bonds. Smith supported his theory by a study which showed that a well-diversified portfolio of common stock of important companies had consistently outperformed a bond portfolio over any ten-year period since the Civil War if the return included price changes as well as interest or dividends.

Smith's study became the official textbook of the new-era stock market of the roaring twenties.<sup>4</sup> In fact, his original theory was ". . . copied and distorted by other financial writers and market letter fabricators until its author was forced to disclaim responsibility for the absurdities that were being committed in his name."<sup>5</sup> Common stocks as a

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<sup>3</sup>Edgar Lawrence Smith, Common Stocks as Long-Term Investments (New York: The Macmillan Company, 1924).

<sup>4</sup>Benjamin Graham, David L. Dodd, and Sidney Cottle, Security Analysis: Principles and Technique (4th ed.; New York: McGraw-Hill Book Company, 1962), p. 409.

<sup>5</sup>Emerson Wirt Axe, "The Stock Market Still Blocked by Unliquidated Debris for the 'New Era,'" The Annalist, April 17, 1931, p. 722.

class were accepted as investments of little risk because of the persistent secular price uptrend of the stocks in Smith's portfolio. This almost complete reversal of investor attitudes toward common stocks was succinctly explained by Emerson Wirt Axe, who wrote:

Before the war, buying stocks was always regarded as dangerous. And west of Pittsburgh it was not even moral. One might as well have been a grain trader or a gambler. But the Liberty loans accustomed people to buying securities and the widespread discussion of E. L. Smith's theory of common stocks as long term investments convinced the public that security speculation was both safe and respectable. Finally, the spectacular advance in stock prices over the last six years and the great increase in the number of issues listed have advertised the stock market as never before. Like golf and bridge, stock speculation, once the amusement of the few, has become a national pastime.<sup>6</sup>

The new-era philosophy of the 1920's signaled the end of the evaluation of common stocks as investments on the basis of balance sheet analysis. As would be expected in the booming 1920's, a growth stock cult emerged which favored the income statement and earnings per share as the basis of common stock evaluation for investment purposes. Since this study is concerned with making earnings-per-share statistics as meaningful as possible to investors who might use them for the evaluation of companies with warrants outstanding, a closer look at the philosophy of the new era is appropriate. Axe, a financial writer for The Annalist during the 1920's, analyzed the tenets of this philosophy shortly after the October, 1929 crash. Following is a summary of some of the principles he observed:

1. What has happened in the past is of little interest; every stock must be judged on its own merits.

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<sup>6</sup>Emerson Wirt Axe, "A 'Through the Looking-Glass' Stock Market; Popular Illusions Rule," The Annalist, April 18, 1930, p. 840.

2. A distinction between speculation and investment is not valid. Speculation merges into investment and investments contain speculative elements.
3. The idea that the purchase of common stocks involves considerable risk is unsound. Common stocks are a better long-term investment than bonds if purchased in sufficient diversification.
4. There is no such thing as "the market" because individual stocks move differently. Consequently it is more important to know what to buy than when to buy. Good stocks can be bought anytime.
5. The worth of a stock can be judged reasonably well by examining annual reports and earnings statements. The fact that insiders know the contents of statements before they are published does not materially reduce their value for price forecasting purposes.
6. The trend of stock prices is always upward and bear markets are unlikely.<sup>7</sup>

Thus, basic investment concepts such as asset backing and earnings and dividend yields were abandoned. Current price was of little significance because earnings growth would soon justify the price. No attempt was made to establish a fundamental investment value. The only quantitative input which remained was the earnings growth rate, which was usually projected on the basis of the most recent results without adequate consideration to factors which might cause the rate to change.<sup>8</sup> Thus the trend of earnings per share, correctly or incorrectly, became established as one of the major factors in the evaluation of common stocks

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<sup>7</sup>Emerson Wirt Axe, "New Popular Theories of Investment, Speculation Go Down the Drain in Stock Crash," The Annalist, November 1, 1929, p. 859.

<sup>8</sup>Axe commented that trend ". . . meant simply that earnings had been increasing for three or four years--which earnings of most companies had, because business had been improving since 1924 . . . ." See Emerson Wirt Axe, "The Stock Market Still Blocked by Unliquidated Debris from the 'New Era,'" The Annalist, April 17, 1931, p. 722.



during the 1920's. Trend in earnings per share, whether used alone or in conjunction with other quantitative or qualitative factors, is still a major factor in common stock valuation and this trend is one of the attributes of earnings per share that must be considered in earnings-per-share computations involving warrants.<sup>9</sup>

#### Early Importance of Earnings per Share

With the change in investor attitudes toward common stocks as investments and with the almost exclusive reliance upon earnings trend in their evaluation, the financial press began publishing earnings-per-share statistics in their earnings announcements during the early 1920's. This was a logical development because it allowed valid interperiod comparisons of the net income of companies with changing capital structures. While an investor might be impressed with a company which doubled its net income with no change in shares outstanding, his attitude would change if he learned that the number of shares had doubled through the sale of additional stock to the public. Thus earnings per share relates the net income theoretically available to common stockholders to each unit of capital provided by those stockholders.

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<sup>9</sup>The point that common stock evaluation procedures of the 1920's were still practiced, to some extent, at least, in the early 1960's is made by Graham, Dodd, and Cottle, who stated: "The carouse of the 1920's succeeded in mixing up speculative and investment viewpoints in inextricable fashion--nor have we yet been able to put asunder the approaches that were so undivinely joined together." See Benjamin Graham, David L. Dodd, and Sidney Cottle, op. cit., p. 409. That such procedures persisted until the late 1960's is affirmed by Bellemore and Ritchie. See Douglas H. Bellemore and John C. Ritchie, Jr., Investment: Principles, Practices, Analysis (3d ed.; Cincinnati: South-Western Publishing Company, 1969), p. 298.

The number of common shares outstanding is the common denominator which reduces aggregate earnings to a basis that is comparable with stock prices, which are always stated on a per-share basis. The stating of earnings on a per-share basis also allows a comparison of earnings with dividends, which are usually quoted on a per-share basis. Through the use of the price-earnings ratio, comparison among corporations with different capital structures, as well as interperiod comparisons of the same company, can be made. Weston and Davidson, both members of the Accounting Principles Board at the time APB Opinion No. 15 was released, have concluded that the purpose of earnings-per-share statistics is as follows:

For the present we may conclude that the purpose of earnings per share data is to attribute the earnings of a corporate entity for a specified period to the capitalization structure of the entity existing during that period. Stated another way, the purpose is to relate the earnings for a period to the various categories of equity based on their relative legal and/or economic relationships, preferences and privileges.<sup>10</sup>

By 1923, earnings-per-share data of many companies were being published by the financial press. For example, of the 29 companies reporting earnings in February 12, 1923 issue of The Annalist, 19 also reported earnings per share.<sup>11</sup> But whether earnings per share, as published during this period, achieved its purpose of making the earnings of differing corporate capital structures more comparable is questionable. When comparative earnings-per-share figures were published, they were

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<sup>10</sup>Frank T. Weston and Sidney Davidson, "What Will Accounting Changes Do to Earnings?" Financial Analysts Journal, XXIV (September-October, 1968), 59.

<sup>11</sup>The Annalist, February 12, 1923, p. 254.

often as misleading as absolute earnings. For example, in 1923 The Annalist reported the quarterly earnings of Underwood Typewriter Company as follows:

Underwood Typewriter Company, for quarter ended September 30, 1923, reports net profits of \$488,468, after depreciation but before Federal taxes, equivalent, after preferred dividends, to \$1.05 a share (par \$25) earned on outstanding \$10,000,000 common stock compared with net profits of \$341,993, or \$3.08 a share (par \$100), earned on outstanding \$9,000,000 common stock in third quarter of 1922.<sup>12</sup>

Mergers also created problems in earnings-per-share reporting. General Foods reported earnings per share, after adjustment for a two-for-one stock split in September, 1925, for the years 1924-1926 as \$4.72, \$3.35, and \$7.71, respectively. The apparent drop in earnings per share in 1925 was not caused by adverse economic conditions or poor management, but by the method of computing the figure. General Foods had acquired Jell-O Company on December 25, 1925 through the issuance of 570,000 shares of common stock. In computing earnings per share, the earnings of Jell-O were excluded from the numerator, but the shares issued for its acquisition were included in the denominator. A more comparable figure, based on average shares outstanding, would have been \$5.83.<sup>13</sup> An investor who used the trend of earnings per share in evaluating the common stock of General Foods would almost certainly reach a different conclusion if he were aware of the method of computing 1925 earnings per share. Without this information, he would conclude that the three-year trend, although upward, was highly variable. Conversely, if he used only the latest two

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<sup>12</sup>The Annalist, November 12, 1923, p. 650.

<sup>13</sup>Wadsworth H. Mullen, "The Effect of Capital Stock Increases on per Share Earnings and Book Value," The Annalist, July 10, 1931, p. 43.

years, he would conclude that earnings had more than doubled when in fact the increase was only about 32 percent.

Failure to adjust retroactively for stock dividends also destroyed the comparability of earnings per share. This was perhaps more serious than the failure to adjust for stock splits, because the average investor would be less likely to investigate a small decrease in earnings per share caused by a 5 or 10 percent stock dividend than he would a larger decrease caused by a stock split.<sup>14</sup>

The issuance of stock dividends was a common practice during the 1920's.<sup>15</sup> There was considerable evidence that the public and some financial writers did not understand the ultimate effect of this practice on stock prices. Stock dividends were devised as a means of allowing a corporation to obtain capital for expansion from its stockholders in the simplest manner by retaining cash that would otherwise be paid out as dividends. At the same time, it permitted stockholders to realize cash from sale of the stock received as a dividend. Advocates of stock dividends presented the argument that the final effect of a stock dividend was the same as if a company had paid a cash dividend and each stockholder had in turn reinvested that cash in new stock of the company. With appropriate accounting procedures for stock dividends, this argument might have been valid, but some companies were issuing stock dividends

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<sup>14</sup>Ibid., pp. 43 and 44.

<sup>15</sup>See, for example, Walter J. Matherly, "Last Year's Flood of Stock Dividends," The Annalist, March 12, 1923, p. 380 and "The Principal Causes of the Stock Market Crisis," The Annalist, January 31, 1930, p. 310.

without capitalizing any retained earnings while others capitalized a nominal amount.<sup>16</sup>

The fallacy of this argument is illustrated in the following example. Adalbert Wolff, in an article for The Annalist, advocated periodic stock dividends for the reasons cited above.<sup>17</sup> He used as an example the North American Company, which regularly declared a 2 1/2 percent quarterly stock dividend during most of the 1920's. Earnings per share were \$3.85 in 1926 and \$3.86 in 1927, but the market value of the stock dividends in each year was approximately \$7.00. R. H. Montgomery, the distinguished accountant and author, in a letter to the editor of The Annalist pointed out that cash dividends could not legally exceed earnings per share for any extended period of time. He speculated, therefore, that a change from stock dividends to cash dividends would bring about a radical change in the market value of the stock. He concluded, "To me, as an accountant, it appears to be a pyramiding which entirely disregards the actual earnings per share and presents a false picture to stockholders."<sup>18</sup>

E. H. H. Simmons, president of the New York Stock Exchange, concluded that the excessive use of stock dividends and the failure of the vast majority of investors to understand their true effect on stock prices

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<sup>16</sup>J. M. B. Hoxsey, "Accounting for Investors," The Journal of Accountancy, L (October, 1930), 265 and 266.

<sup>17</sup>Adalbert Wolff, "Periodic Rights and Stock Dividends--Experience, Successful and Otherwise," The Annalist, July 6, 1928, pp. 5-6.

<sup>18</sup>R. H. Montgomery, "Periodic Rights and Stock Dividends," The Annalist, July 27, 1928, p. 141.

contributed to the high level of security prices in the summer of 1929 and the resulting panic in October, 1929.<sup>19</sup> In 1929, the governing committee of the exchange had created a special committee on stock dividends to study the accounting aspects of the problem. This committee issued two reports which were adopted by the governing committee on September 11, 1929 and April 30, 1930. The conclusion was that the minimum charge against retained earnings for stock dividends ". . . appears clearly to be the sum of the theretofore capital and capital surplus per share, for each share issued as a dividend."<sup>20</sup> The exchange would not, however, delist a company for failure to comply with this ruling provided there was full disclosure of the accounting method used.<sup>21</sup> Despite this early action by the New York Stock Exchange, the first official pronouncement by accountants on the subject of stock dividends was not issued until September, 1941. Accounting Research Bulletin No. 11, Corporate Accounting for Ordinary Stock Dividends, as revised in November, 1952, required a charge to earned surplus for the fair value of the additional shares issued.<sup>22</sup>

With the shift in emphasis from the balance sheet to the income statement and with the increasing availability of earnings per share,

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<sup>19</sup>"The Principal Causes of the Stock Market Crisis," The Annalist, January 31, 1930, p. 310.

<sup>20</sup>J. M. B. Hoxsey, op. cit., 267.

<sup>21</sup>Ibid., 282.

<sup>22</sup>Committee on Accounting Procedure of the American Institute of Certified Public Accountants, Restatement and Revision of Accounting Research Bulletins, Accounting Research Bulletin No. 43 (New York: American Institute of Certified Public Accountants, 1953), p. 51.

investors began using price-earnings ratios and their reciprocal, earnings-price ratios, for the evaluation of common stocks. Even the Harvard Business Review published a study of "normal" rates of capitalization by industry for the years 1922 through 1925. While the article was not a defense of the capitalization of earnings on theoretical grounds, it did not attack the practice, as shown by the following:

Because of simplicity, the capitalization of earnings is often used as a method for appraising the value of common stock of a going concern. Since, in the last analysis, the value of any particular business is its capacity to earn profits, this method would seem to conform to sound economic theory. . . . The problem is not so much the justification of the method, but rather determination of the proper rate which should be used in capitalizing earnings, and the extent to which this rate can be of real use in valuing the common stock of a going concern.<sup>23</sup>

The conclusion was that while a normal rate of capitalization of earnings computed by averaging several yearly rates probably could not be used in valuing common stocks with any degree of success, ". . . a yearly rate can be computed and used as a starting point in valuing common stocks."<sup>24</sup>

The use of price-earnings ratios in valuing common stocks had become so widespread by 1929 that the president of the New York Stock Exchange, E. H. H. Simmons, cited it as one of the contributing factors in the October, 1929 stock market crash. He stated:

Another contributing cause was the practice of gauging the value of securities by multiplying their most recently reported net earnings by some factor which was deemed to be applicable to the industry in which the company was engaged. This method

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<sup>23</sup>"Summaries of Business Research: Market Capitalization Rates of Industrial Earnings," Harvard Business Review, VI (October, 1927), 75.

<sup>24</sup>*Ibid.*, 80.

of valuation, while perfectly proper, leads to inflation in periods of great industrial activity.<sup>25</sup>

Accountants' Attitude  
toward Earnings per Share

The enthusiasm of investors for valuing common stocks by applying price-earnings ratios to earnings per share was not shared by accountants. As the preceding discussion has shown, there was need for improvement in the method of computing and reporting earnings per share. But accountants, who believed that valuation techniques based heavily on earnings per share were misleading, chose not to encourage such techniques by refusing to include earnings-per-share statistics in the financial statements.

During the two decades from 1920 to 1940, The Journal of Accountancy published only one article on earnings per share. In April, 1930, Natvig pointed out the usefulness of earnings-per-share statistics for measuring market values and the need for a standard method of computing them.<sup>26</sup> An editorial the following month, in answer to the article, concluded that ". . . it is a fallacy to allow oneself to be governed by earnings 'per share' in estimating probable market value."<sup>27</sup>

This attitude of accountants toward earnings per share prevailed until the publication of APB Opinion No. 9 in December, 1966. For

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<sup>25</sup>"Principal Causes of the Stock Market Crisis," The Annalist, January 31, 1930, 310.

<sup>26</sup>Andreas S. Natvig, "Earnings per Share," The Journal of Accountancy, XLIX (April, 1930), 252-263.

<sup>27</sup>"Earnings per Share," The Journal of Accountancy, XLIX (May, 1930), 325.



example, in April, 1951, The Journal of Accountancy published an article by W. F. Stanley, Vice President and Secretary of Southwestern Public Service Corporation, urging accountants to include earnings and dividends per share in the financial statements.<sup>28</sup> The editors invited J. E. Robertson, a partner in Haskins & Sells, New York, to respond to the Stanley article. In summarizing Robertson's comments, the editors concluded: "Little significance can be attached to earnings per share as a figure purporting to express operating results. It is unwise, therefore, to encourage stockholders to rely on this item."<sup>29</sup>

This attitude was again confirmed in 1955 when Bertrand J. Belda urged accountants to use uniform methods in computing earnings per share. Carman Blough, editor of accounting and auditing problems in The Journal of Accountancy, commented on Belda's letter as follows: "We do not join in Mr. Belda's enthusiasm for the earnings per share figure as a measure of a company's performance, since it is usually necessary to know the elements going into the make-up of the net income figure if the per share figure is to be meaningful."<sup>30</sup> Blough did agree, however, that since a great deal of importance was attached to earnings per share by financial reporters, security dealers, and investors, more attention should be paid

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<sup>28</sup>W. F. Stanley, "Financial Statements Should Report Earnings and Dividends per Share," The Journal of Accountancy, XCI (April, 1951), 566-568.

<sup>29</sup>J. E. Robertson, "Why Accountants De-emphasize Earnings per Share," The Journal of Accountancy, XCI (April, 1951), 568.

<sup>30</sup>Carman G. Blough (ed.), "Accounting and Auditing Problems: The Calculation of Earnings per Share," The Journal of Accountancy, C (September, 1955), 62.

to the development of uniformity in its calculation.<sup>31</sup>

As the result of accountants' refusal to accept earnings-per-share statistics, very little attention was paid to their calculation. But at least one financial writer showed evidence of having given considerable thought to the problem. In 1931, Wadsworth H. Mullen wrote an article for The Annalist suggesting methods for making earnings per share more comparable under conditions of various forms of capitalization increases.<sup>32</sup> Mullen considered the effects on earnings per share caused by: (1) stock issuances for the acquisition of assets, (2) stock dividends, (3) the conversion of senior securities, and (4) the exercise of stock purchase warrants, stock rights, and employee stock options.

A description of Mullen's method for making prior period earnings per share comparable with the period in which warrants were exercised is appropriate to this study. Mullen began by computing the average rate of return on owners' equity (i.e., net income divided by average owners' equity) for the period in which the warrants were exercised. He then assumed that the earnings on the warrant proceeds would accrue at this rate for the fraction of the period prior to the exercise of the warrants and at a comparable rate for previous periods. Finally, he computed earnings per share on a retroactive basis by adding these assumed earnings to the numerator and by increasing the denominator by the number of shares issued for the warrants.

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<sup>31</sup>Ibid.

<sup>32</sup>Wadsworth H. Mullen, "The Effect of Capital Stock Increase on per Share Earnings and Book Value," The Annalist, July 10, 1931, pp. 43-45.

Perhaps the reason accountants chose to ignore earnings-per-share statistics had to do with the quality of the income statements that they were providing to investors during the 1920's. In fact many companies did not publish income statements at all, the rationalization being that ". . . a concern 'gives aid and comfort to its enemies' (i.e., competitors) when it makes a complete and illuminating financial statement . . . ." <sup>33</sup> Numerous examples of the complete inadequacy of financial information being provided to stockholders and investors were cited by William Z. Ripley in an article pleading for the stockholder's right to information. The following excerpt is typical:

. . . It is certainly out of line with good business practice that the Amoskeag Manufacturing Co., the greatest cotton mill in the world, should render an income account not in dollars but in yards, along with a petty trial balance; or that the Waltham Watch Co., owned by more than 3,000 people, two years after reorganization, after having appealed to the public for subscription to its securities, should still vouchsafe nothing but a skeleton balance sheet. Neither does the former instance obscure unprofitable operation nor does the latter, as it appears, cover up the full measure of current profits. Both meager reports are incompatible with the best modern standards of business practice. <sup>34</sup>

All too frequently, even those firms providing income statements condensed the information to such an extent that the statements were practically useless for security analysis purposes. In 1929, Laurence H. Sloan published a comparative study of corporation profits for the years 1926 and 1927. As a result of this study, Sloan joined Ripley in the plea for better and more complete financial statements. He found, for

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<sup>33</sup>Laurence H. Sloan, Corporation Profits: A Study of Their Size, Variation, Use, and Distribution in a Period of Prosperity (New York: Harper & Brothers Publishers, 1929), pp. 344-345.

<sup>34</sup>William Z. Ripley, "Stop, Look, Listen!: The Shareholder's Right to Adequate Information," The Accountant, March 5, 1927, p. 347.

example, in an analysis of the income statements of the 545 leading industrial corporations, that only 235, or 43 percent of the total, included gross income.<sup>35</sup>

Gullible investors, confronted with completely inadequate income statements, became convinced ". . . that nearly all companies conceal a substantial proportion of their earnings and that because they do there is no telling how much the stock may be worth."<sup>36</sup> Ripley used National Biscuit Company as an example of the situation which gave rise to this type of attitude on the part of the investing public. He charged that the company understated post World War I profits through excessive depreciation. In 1922 National Biscuit abandoned this policy and with the resulting increase in profits, the price of its stock bounded upward.<sup>37</sup> This attitude of investors also contributed to the high prices of stocks just prior to the stock market break in October, 1929.<sup>38</sup>

Under these conditions, the practice of evaluating common stocks by applying a price-earnings multiplier to the latest earnings per share was not surprising. Income statements, if available at all, simply did not provide sufficient detail to make a meaningful evaluation of past performance, much less provide a basis for the projection of future performance. Investors and security analysts had no other choice; they used

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<sup>35</sup>Sloan, op. cit., p. 62. Gross income, as used by Sloan, means gross revenue.

<sup>36</sup>Emerson Wirt Axe, "A 'Through the Looking-Glass' Stock Market; Popular Illusions Rule," The Annalist, April 18, 1930, p. 840.

<sup>37</sup>Ripley, op. cit., p. 348.

<sup>38</sup>"The Principal Causes of the Stock Market Crisis," The Annalist, January 31, 1930, p. 310.

the information that management and their accountants made available.

By failing to require management to publish informative and timely income statements during this period when common stock evaluation techniques were being formulated, accountants must share much of the responsibility for the earnings-per-share "syndrome." In addition, the failure to establish uniform methods of computing earnings-per-share statistics until almost half a century later compounded the error.

Of course, the argument could be advanced that public accountants were not firmly enough established to force management to provide adequate financial information to investors. It was not until the establishment of the Securities and Exchange Commission in 1933 that companies registering securities were required to obtain the opinion of certified public accountants. But Sloan, writing in 1929, felt that, given a concerted effort, public accountants could bring about the needed improvements. He stated:

The public accountant has an interest at stake. He certifies the report. It is our opinion that if any important group of public accountants would agree to insist upon certain standards of adequacy--even though that adequacy fell far short of what we have expressed as our opinion of the ideal--that the accountants' position would be strengthened, and that the resistance would actually prove to be much milder than it is assumed to be.

Indeed, we ascribe the major portion of the unsatisfactory situation which obtains in regard to corporation statements to inertia and tradition, more than to a conscious effort to withhold information which should really be given.<sup>39</sup>

In summary, investors accepted common stocks as investments during the 1920's. And their basis for evaluating these stocks shifted from the traditional balance sheet analysis, which emphasized the past, to an

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<sup>39</sup>Sloan, op. cit., pp. 345-346.

income approach, which emphasized the future. Since many companies published no income statements, or statements with little detail, investors began using earnings per share and price-earnings ratios to evaluate common stocks. Little emphasis was placed on the fundamental values which, prior to World War I, had been required in order for a common stock to be considered an investment.

Accountants rejected this new income approach and attempted to discourage its use by refusing to include earnings-per-share statistics in the financial statements. This refusal to include earnings-per-share statistics in the financial statements did not achieve the desired goal of discouraging an emphasis on earnings per share for common stock evaluation purposes. Earnings per share continued to be one of the most important financial statistics used by investors. Thus the accountants' refusal to report earnings per share merely handicapped investors by preventing the development of a uniform method of computing and reporting earnings per share.

Probably as a result of the 1929 stock market crash, the almost exclusive reliance on future expectations was modified somewhat in the 1930's and 1940's. More attention was paid to the past record of a company and its financial condition as evidence of a promising future. This was a throwback to the period prior to World War I when very few common stocks were considered of investment quality. But emphasis continued to be on an upward trend in earnings per share and expectations that the trend would continue into the future.<sup>40</sup> With the bull market of the

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<sup>40</sup>Benjamin Graham, David L. Dodd, and Sidney Cottle, Security Analysis: Principles and Technique (4th ed.; New York: McGraw-Hill Book Company, 1962), p. 413.

1950's the enthusiasm for common stocks continued to increase. Once again, as in the 1920's, the search for "growth stocks" was in full swing. Despite some adverse market reactions in the 1960's, the emphasis on future expectations continues. With this background on the development of common stocks as investments and the emergence of earnings per share as an important financial statistic used in their evaluation, the role of earnings per share in current theory and practice will be examined more closely.

### BASIC METHODS OF COMMON STOCK ANALYSIS

Over the years, two distinctive schools of thought have emerged on the question of how to make common stock investment decisions. Technical analysis utilizes little or no financial information generated by accountants and will be discussed only briefly. Fundamental analysis depends upon financial information and particularly on earnings per share.

#### Technical Analysis

In its purest form, technical analysis is concerned only with technical market data such as price and volume trends. Technicians study the market itself rather than the external factors reflected in the market. They recognize that stock prices are the result of such factors as expected earnings and expected dividends and the rate at which these expectations are capitalized. Technicians contend, however, that these factors are reflected in the supply and demand for stocks at a

given price.<sup>41</sup> In their view, by studying the past trading history of price and volume movements, future trends can be detected.

The first, and perhaps best known, of the technical methods was the Dow Theory, named after Charles H. Dow, one of the founders of Dow Jones & Company. Dow published the basic methodology of his theory in a number of editorials in The Wall Street Journal between 1900 and 1902.<sup>42</sup> Other technical analysis methods include point-and-figure charting, bar charting, filter techniques, odd lot theory, advance-decline line, and Barron's confidence index.

Criticism of technical analysis has been extensive. Critics argue, and technicians admit, that if many investors used technical analysis, price movements would occur as a result of the techniques used and profits would disappear. Advocates counter that this is not likely to occur because the average investor is not likely to spend the time and effort required by the methodology.<sup>43</sup> More serious are the implications of the random walk hypothesis, which will be discussed in a subsequent section of this chapter. Extensive empirical testing of a number of technical trading rules in general supports the conclusion that stock prices cannot be predicted on the basis of past price data alone.<sup>44</sup>

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<sup>41</sup>Donald E. Vaughn, Survey of Investments (New York: Holt, Rinehart and Winston, Inc., 1967), p. 322. See also Robert A. Levy, "Conceptual Foundations of Technical Analysis," Financial Analysts Journal, XXII (July-August, 1966), 83.

<sup>42</sup>Henry A. Latane and Donald L. Tuttle, Security Analysis and Portfolio Analysis (New York: The Ronald Press Company, 1970), p. 354.

<sup>43</sup>*Ibid.*, p. 271 and Vaughn, *op. cit.*, p. 400.

<sup>44</sup>See George E. Pinches, "The Random Walk Hypothesis and Technical Analysis," Financial Analysts Journal, pp. 104-110 for a comprehensive summary of these studies and their results.



Although pure technical analysts have no need for financial information such as earnings per share, some financial advisors advocate a combination of fundamental and technical analysis. Vaughn reports good trading and investment results by using fundamental analysis to select desirable issues. Timing of the purchase is then determined by the technical indicators.<sup>45</sup>

Latane and Tuttle also recommend technical analysis as a timing device to be used in conjunction with fundamental analysis. They express some skepticism as to its reliability, however.<sup>46</sup> The majority opinion seems to be summed up by Bellemore and Ritchie, who state:

A wide review of empirical evidence and the judgment of most successful investors--those who have built up substantial capital over the years--leads to the comment that the technical methods for forecasting have not proved very rewarding.<sup>47</sup>

### Fundamental Analysis

The major premise of fundamental analysis is that an investment value can be determined for individual common stocks apart from their current price. In theory, this value is simply the present worth of all future cash payments expected to be received from the security.<sup>48</sup> A second premise of fundamental analysis is that actual price will at some future point converge to this investment value if the analyst is correct

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<sup>45</sup>Vaughn, op. cit., p. 321.

<sup>46</sup>Latane and Tuttle, op. cit., p. 354.

<sup>47</sup>Douglas H. Bellemore and John C. Ritchie, Jr., Investment: Principles, Practices, Analysis (3d ed.; Cincinnati: South-Western Publishing Company, 1969), p. 98.

<sup>48</sup>Latane and Tuttle, op. cit., pp. 260-261.

in his estimate of the investment value.<sup>49</sup> In essence, determining the investment value of a stock is equivalent to predicting the security's future price.<sup>50</sup>

Fundamental analysis, as the name implies, utilizes basic economic and financial information and other external factors which affect the stock market. The fundamental analyst, in addition to investigating general business conditions as reflected in the economy as a whole and in the specific industries in which he is interested, analyzes the financial statements of individual companies. He considers qualitative factors as well as quantitative factors in arriving at an investment value for each security under observation. This value is then compared with the existing market price to determine the appropriate investment decision--buy, sell, or hold.

Since this chapter is concerned with the attributes of earnings per share that are used by investors in valuing common stocks, two questions relative to fundamental analysis need to be answered.

1. Is fundamental analysis used extensively, as opposed to technical analysis?

2. Is earnings per share a statistic frequently used by fundamental analysts?

There are no statistics available showing the relative frequency of use of the two basic methods of security analysis. Further as previously pointed out, some analysts advocate a combination of the two

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<sup>49</sup>Ibid., p. 12.

<sup>50</sup>Robert A. Levy, "Conceptual Foundations of Technical Analysis," Financial Analysts Journal, XXII (July-August, 1966), 83.

methods. Vaughn indicates that technical analysis gained in popularity during the early 1960's.<sup>51</sup> At least one mutual fund, Technivest Fund, seeks maximum capital growth by emphasizing technical analysis.<sup>52</sup>

On the other hand, Andrew Feretti, moderator of a Certified Financial Analysts research seminar on investment company portfolio management, concluded that few mutual funds base their investment decisions entirely upon technical analysis. To the contrary, he stated: "Fundamental security analysis is typically given the greatest weight, because it is indispensable to an understanding of the environment in which an investment plan is outlined."<sup>53</sup> Latane and Tuttle also conclude: "Few investors make buy-sell decisions solely on the basis of technical analysis . . . ."<sup>54</sup> In summary, the conclusion is that the vast majority of investors, as opposed to traders, utilize fundamental analysis in making investment decisions.

The answer to the second question with respect to the frequency of use of earnings per share is that earnings per share is a primary financial statistic used by fundamentalists in valuing common stock. This will be demonstrated in the remainder of this chapter through an analysis of the fundamental school's methodology.

Perhaps as a result of the stock market crash in 1929, there has

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<sup>51</sup>Vaughn, op. cit., p. 321.

<sup>52</sup>Latane and Tuttle, op. cit., p. 378.

<sup>53</sup>Andrew P. Feretti (ed.), Investment Company Portfolio Management: Proceedings, C.F.A. Research Seminar, May 26-27, 1969, Charlottesville, Virginia (Homewood, Illinois: Richard D. Irwin, Inc., 1970), p. 78.

<sup>54</sup>Latane and Tuttle, op. cit., p. 353.

been an appreciable amount of market-oriented research, particularly during the 1930's and from 1950 to present. This research, largely performed by academicians, has centered around common stock valuation methods, price behavior, and portfolio management. While some of the theory produced by the research has been accepted by practitioners, none has been particularly successful in practice, largely because of the difficulty of quantifying the data. Before analyzing how practitioners employ earnings per share in valuing common stock, some of the more important research in the areas noted above will be examined for its implications to common stock valuation and earnings per share.

#### SIGNIFICANT THEORETICAL AND EMPIRICAL RESEARCH RELATED TO COMMON STOCK VALUATION

Present value theory was applied to common stocks in the 1930's. Although its emphasis is on cash flows, the application of present value theory relies heavily on earnings per share. In the 1950's and 1960's, interest in the random walk theory was revived through extensive empirical testing. The results of these tests led to the efficient markets theory which tends to discredit technical analysis. An examination of these theories and their implications to fundamental analysts who use earnings per share follows.

#### Present Worth Valuation Theories

Although present value theory had been in use for many years in the construction of bond tables, the idea that it was also applicable to common stocks is attributed to Robert F. Weise, who published an article

on the subject in the September 8, 1930 issue of Barron's.<sup>55</sup> The first full development of present worth theory for valuing common stocks was by John Burr Williams in his book, The Theory of Investment Value.<sup>56</sup> The theory is simple in that the investment value of a common stock is the future stream of dividends discounted at an appropriate rate or rates. The difficulty lies in its application. Future dividends must be estimated to infinity, and an appropriate discount rate or rates must be selected. The technique may be modified for investment horizons shorter than infinity. The modification consists of discounting to present value an estimate of the market price of the stock at the end of the holding period.

Advocates of the present value theory of common stock, by making certain limiting assumptions about the growth rate of dividends or earnings and dividend payout ratios, have published a number of present value tables that should encourage unsophisticated investors to use the technique. One such set of tables will be examined in detail to demonstrate the importance of earnings per share to present worth valuation theory.

Molodovsky, May, and Chottiner have constructed a series of tables for determining the earnings multiplier for various rates of return under various assumptions as to the earnings growth rate.<sup>57</sup> Although input and output of the tables are in terms of earnings per share, the

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<sup>55</sup>Bellemore and Ritchie, op. cit., p. 300.

<sup>56</sup>John Burr Williams, The Theory of Investment Value (Cambridge, Massachusetts: Harvard University Press, 1938).

<sup>57</sup>Nicholas Molodvsky, Catherine May, and Sherman Chottiner, "Common Stock Valuation: Principles, Tables and Application," Financial Analysts Journal, XXI (March-April, 1965), 104-123.

theoretical structure ". . . rests on the foundation that the value of a common stock is the present worth of its future stream of dividends."<sup>58</sup> The conversion from earnings per share to dividends per share is made possible through the assumption that the dividend payout ratio is a function of earnings growth.<sup>59</sup>

Molodovsky's tables are based on the assumption that earnings per share will grow at a constant rate for a limited period and then decline in a linear function to a zero growth rate, which is assumed to continue to infinity. Output of the tables is in terms of a multiplier for normal earnings of \$1.00 per share. Thus the present value of the share of common stock being evaluated is the product of this multiplier and the normal earnings per share. Molodovsky's recommendations for determining normal earnings per share are as follows:

Normal earnings are not a precise figure. They may be found by trend-line analysis using the least-squares criterion. Even so, judgment must enter in the selection of trend periods.

A less satisfactory but still acceptable approach is to determine normal earnings by averaging last year's earnings, the current level of earnings, and next year's expected earnings.<sup>60</sup>

In addition to normal earnings per share, four inputs are required in order to use the tables. All are related, either directly or indirectly, to earnings per share. These inputs are: (1) projected growth rate of earnings per share, (2) constant growth period, (3)

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<sup>58</sup>Ibid., 104.

<sup>59</sup>Ibid., 104-105. Low dividend payouts are the result of a high investment return which in turn causes a high earnings growth rate. High dividend payouts are the result of low investment return which causes low earnings growth. The relationship between dividend payout ratios and current and lagged earnings growth rates was established through multiple regression applied to the Cowles Commission data and Standard & Poor's 500 for the period 1871 to 1962.

<sup>60</sup>Ibid., 105.

diminishing growth period, and (4) rate of return. Molodovsky states that the projected growth rate of earnings may be ". . . the same as the growth rate of earnings in the immediate past, or it may be higher or lower depending on circumstances which may alter the earnings trend."<sup>61</sup> He includes a table which utilizes the ratio of current earnings per share to earnings per share 10 years ago as a basis for approximating the compound annual growth rate. He suggests that the growth rate so determined may be used if the investor expects a continuation of the past growth rate.

The constant growth period is the number of years that the projected constant growth rate of earnings per share is expected to continue. Molodovsky contends that an estimate of its length would be suggested from the analytical procedure used in determining the constant growth rate. The diminishing growth period is the number of years after expiration of the constant growth rate during which earnings per share will decline to a zero growth rate. Molodovsky concludes that this period will depend upon the characteristics of the company. A long period of declining growth would be allowed for a company with exceptionally good prospects while a short period would be used for companies with poor prospects.

Molodovsky states that the rate of return is ". . . the investor's desired rate of return from long-term common stock investments,"<sup>62</sup> and that it should bear some relation to alternate investment opportunities. Thus he appears to factor in risk only indirectly. Others are

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<sup>61</sup>Ibid.

<sup>62</sup>Ibid., 106.

more specific and relate the rate to the uncertainty of the future earnings-per-share growth rate estimates. Bauman, for example, states that the discount rate ". . . is determined by the degree of uncertainty of future cash payments, or is determined by the investor's objectives."<sup>63</sup>

Bauman has published a series of present value tables similar in concept to those of Molodovsky.<sup>64</sup> The principal difference is that the input is in terms of dividends per share and the output is a multiplier for normal dividends of \$1.00 per share. But the inputs to Bauman's present value dividend model, in particular the dividend-per-share growth rate, depend on earnings per share. This is shown by the following statement:

For a given stock, the dividend multiplier, as previously stated, is to be determined by the degree of quality and the future rate of growth in dividends per share; however, the quality and the future size of dividends are heavily dependent on the quality and the future rate of growth of earnings per share. The earnings multiplier is likewise determined by the degree of quality and the future rate of growth in earnings per share.<sup>65</sup>

Although the present worth theory of valuing common stocks is widely accepted, the method has not been adopted in practice to any great extent. This is shown by Bellemore and Ritchie, who state:

The major reason why most, if not all, successful practicing financial analysts reject all present worth theories of common stock valuation which state that the value of a stock is the discounted value of the future stream of dividends (or earnings) is simple. They realize from experience that such long-term projections of earnings and dividends as are required by these

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<sup>63</sup>W. Scott Bauman, "Investment Returns and Present Values," Financial Analysts Journal, XXV (November-December, 1969), 108.

<sup>64</sup>Ibid., 107-120.

<sup>65</sup>Ibid., 117.



theories do not produce figures that have enough reasonable accuracy to be of any practical value. . . .<sup>66</sup>

This conflict between theory and practice is really one of differences in investor time horizons. Although modifications for shorter holding periods can be made by estimating the market price of the stock at the end of a given holding period, the present worth approach implicitly assumes a permanent investment and an infinitely long holding period. On the other hand, the average investor's time horizon appears to be from one to three years.<sup>67</sup> The logic of a short investor time horizon is explained by Bellemore and Ritchie, who compare the investor's time horizon to corporate management's time horizon:

. . . Since corporate managements must invest for the long term, they may act on long-term capital projections in their capital budgeting and investment decisions, but many managements emphasize projects returning the most in 5 years. Investors are not forced to invest for such long terms and therefore need not accept the great risks of acting on very long-term projections for 20, 30, 40, or 50 years. . . .<sup>68</sup>

Perhaps the major contribution of present-value models to common stock valuation is that these models force an investor to make explicit assumptions regarding the factors which influence common stock investment values. The traditional multiplier techniques favored by most practitioners and investors do not provide the same rigorous framework for

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<sup>66</sup>Bellemore and Ritchie, op. cit., p. 307. On this point, see also Latane and Tuttle, op. cit., p. 263; Graham, Dodd, and Cottle, op. cit., p. 450; and Ralph E. Badger, Harold W. Torgerson, and Harry G. Guthmann, Investment Principles and Practices (6th ed.; Englewood Cliffs; New Jersey: Prentice-Hall, Inc., 1969), p. 230.

<sup>67</sup>Bellemore and Ritchie, op. cit., p. 114. See also Ralph A. Bing, "Survey of Practitioners' Stock Evaluation Methods," Financial Analysts Journal, XXVII (May-June, 1971), 57.

<sup>68</sup>Bellemore and Ritchie, op. cit., p. 305.

analysis. Yet, as the discussion of these multiplier techniques will show, the two approaches are compatible. Both depend, to a great extent, upon earnings per share, past and future, and its trend and variability.

More recent research in the area of stock prices and market behavior raises questions about fundamental analysts' attempts to establish investment values apart from current market price. The earnings-per-share implications of this research will be examined next.

#### Random Walk and Efficient Markets Theories

Although the random walk hypothesis was tested as far back as 1900 as part of a doctoral dissertation by Louis Bachelier,<sup>69</sup> it did not receive much attention in the finance and investment literature until the 1950's and 1960's. In its original form, the hypothesis stated that changes in stock prices are completely unsystematic, i.e., changes in stock prices are statistically independent, or random. In its narrowest interpretation, the theory implies that future price movements, being independent of past price movements, cannot be predicted on the basis of past price data alone. Thus, the various theories of technical analysis, all of which are based on the assumption that the historical patterns of past price behavior repeat themselves, cannot be used to increase expected gains if the random walk theory holds.

In its broadest interpretation, the random walk theory states that prices fully reflect all available information. This expanded

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<sup>69</sup>Louis Bachelier, "Theory of Speculation," The Random Character of Stock Market Prices, ed. Paul H. Cootner (Cambridge, Massachusetts: The M.I.T. Press, 1964), pp. 17-78.

version implies that the capital market is a perfectly efficient mechanism under which prices adjust instantaneously and accurately as soon as relevant information is received by the participants. Price movements under this assumption are random because the information affecting prices arrives in a random manner.<sup>70</sup>

If the perfect capital market version of the random walk is valid, fundamentalists who analyze past financial information such as earnings per share are in much the same position as technical analysts. As new information affecting the intrinsic value of a security become available, the security's price would immediately change to reflect the new intrinsic value. Under these conditions, actual prices represent good estimates of intrinsic value and attempts by fundamentalists to establish an intrinsic value separate from current price are useless.<sup>71</sup>

Testing of the random walk hypothesis has been extensive.<sup>72</sup> As a result of the empirical evidence, the concept of a perfect capital market has evolved into that of an efficient capital market. A capital market in which all participants possessed perfect knowledge, although useful for theoretical purposes in explaining the random walk theory, simply did not exist. Henry C. Wallich, former Assistant Secretary of

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<sup>70</sup>Latane and Tuttle, op. cit., p. 506.

<sup>71</sup>Eugene F. Fama, "The Behavior of Stock-Market Prices," The Journal of Business, XXXVIII (January, 1965), 40. As used in this study, intrinsic value is synonymous with investment value.

<sup>72</sup>See, for example, Paul H. Cootner (ed.), The Random Character of Stock Market Prices (Cambridge, Massachusetts: The M.I.T. Press, 1964), which contains 21 articles on the subject. For a more recent bibliography, see Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," The Journal of Finance, XXV (May, 1970), 416-417.

the Treasury and member of the President's Council of Economic Advisors, gives the following explanation:

This is an idealization of even so good a market as the New York Stock Exchange. News does not travel instantaneously; it is not acted upon immediately; some people have inside information. Prophecies can be self-fulfilling--if enough people follow a leader, the leader is running something akin to a pool operation. Moreover, a few rare individuals may genuinely be able to see farther ahead than the rest. . . .<sup>73</sup>

In general, the empirical evidence supports a random walk-efficient market hypothesis. Consistent evidence of dependence in day-to-day price changes showed up as positive serial correlations in Fama's test of the 30 Dow Jones industrials.<sup>74</sup> The filter tests of Alexander<sup>75</sup> and Fama and Blume<sup>76</sup> also indicate a short-term dependence in price changes. Fama also found that large price changes tend to be followed by large price changes, although the sign is unpredictable.<sup>77</sup> And Neiderhoffer and Osborne found a tendency toward excessive reversals in common stock price changes from transaction to transaction.<sup>78</sup>

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<sup>73</sup>Henry C. Wallich, "What Does the Random Walk Hypothesis Mean to Security Analysts?" Financial Analysts Journal, XXIC (March-April, 1968), 160.

<sup>74</sup>Eugene F. Fama, "The Behavior of Stock-Market Prices," The Journal of Business, XXXVIII (January, 1965), 72.

<sup>75</sup>Sidney S. Alexander, "Price Movements in Speculative Markets: Trends or Random Walks, No. 2," The Random Character of Stock Market Prices, ed. Paul H. Cootner (Cambridge, Massachusetts: The M.I.T. Press, 1964), p. 369.

<sup>76</sup>Eugene F. Fama and Marshall E. Blume, "Filter Rules and Stock-Market Trading," The Journal of Business, XXXIX (January, 1966), 226-241.

<sup>77</sup>Eugene F. Fama, "The Behavior of Stock-Market Prices," The Journal of Business, XXXVIII (January, 1965), 87.

<sup>78</sup>Victor Niederhoffer and M. F. M. Osborne, "Market Making and Reversal on the Stock Exchange," Journal of the American Statistical Association, LXI (December, 1966), 897-916. Reversals are defined as pairs of consecutive price changes of opposite sign.

In each of the above cases, however, Fama has concluded that no trading rules could be devised to take advantage of the dependence in price changes because any profit would be absorbed by commissions on the transactions.<sup>79</sup> Thus, although the stock markets do not produce completely random price changes and are therefore not perfect capital markets, they are reasonably efficient markets.

What are the implications of an efficient market to the fundamentalist who uses financial data such as earnings per share in his evaluation of common stocks? Fama has concluded that the average investor should concentrate on portfolio analysis. If, under the efficient markets theory, prices always reflect all available public information, he need not be concerned with whether a security is over or under-priced. He merely decides on the combination of expected return and risk which he desires for his portfolio and selects securities randomly from various, or the same, risk classes to achieve this combination.<sup>80</sup>

Latane and Tuttle have concluded that in a world of random walks where the stock markets are essentially perfect or highly efficient, an

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<sup>79</sup>Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," The Journal of Finance, XXV (May, 1970), 414-415.

<sup>80</sup>Eugene F. Fama, "The Behavior of Stock-Market Prices," The Journal of Business, XXXVIII (January, 1965), 40. Portfolio theory is beyond the scope of this study; however, it does not eliminate the security analysis function. Current theory has evolved from the "covariance" model proposed by Harry M. Markowitz in Portfolio Selection: Efficient Diversification of Investments, Cowles Foundation Monograph 16 (New York: John Wiley & Sons, Inc., 1959), pp. 96-100. The concept involves combining individual securities into a portfolio with maximum expected return for a given level of non-diversifiable risk. Thus security analysts are required to estimate expected return and risk. In practice, the Markowitz model has not been widely used, nor have the results been very satisfactory. On these points, see Bellemore and Ritchie, op. cit., pp. 865-867 and Wallich, op. cit., 160.

investor can achieve returns that are larger than the returns for the entire market in only two ways:

1. If the capital market is essentially perfect, the investor must be able to obtain "private" information--either information that is not generally known, or generally known information that has been transformed in some unique fashion such as through the creation of complex variables and models not used by most investors.
2. If the capital market is highly efficient but not essentially perfect, the investor may be able to use public information either before it is fully assimilated by the market or, if the market temporarily overreacts or underreacts, after it is assimilated.<sup>81</sup>

Regardless of the implications of the random walk and efficient markets theories, earnings per share continues to play an important role in security valuation, as will be shown in the following section.

#### THE ROLE OF EARNINGS PER SHARE IN FUNDAMENTAL ANALYSIS

This study will proceed under the assumption that a significant number of investors and their advisors use a fundamental approach in securing and evaluating information relevant to investment decisions. By so doing, they increase the efficiency of the market by reducing the possibility of market power<sup>82</sup> and by increasing the dissemination of information. Whether they are successful in increasing their returns is not significant to this study as long as they in fact do attempt to do

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<sup>81</sup>Latane and Tuttle, op. cit., p. 518.

<sup>82</sup>Market power is the power of participants in the market to influence prices through control of the supply or demand for stocks or through influencing the actions of others by their statements or acts (self-fulfilling prophecies). See Wallich, op. cit., 161.

so through fundamental analysis. Under this assumption, the importance of earnings per share to this fundamental approach will now be considered.

### Importance of Earnings per Share

Fundamentalists use various methods in developing an intrinsic or investment value for common stocks, and it is impossible to specify all such methods in this chapter. There seems to be general agreement, however, that there are four basic quantitative factors which affect prices and are therefore used, in varying degrees, by fundamentalists in establishing such values. This is true in formalized methods based on well-defined theories of valuation as well as for informal and unsophisticated methods.<sup>83</sup> The Bellemore and Ritchie listing of these factors is typical:

1. Asset values
2. Projected earnings and expected growth rate of earnings and their volatility.
3. Projected dividends and expected growth rate and volatility.
4. Capitalization multiplier--the price-earnings ratio for earnings and dividends that is expected in the future.<sup>84</sup>

In practice, these quantitative factors are modified by qualitative factors such as the nature of the industry, management capabilities, and research and development. In fact, as Bellemore and Ritchie point out, quantitative factors, once they are analyzed and used in projections,

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<sup>83</sup>Bellemore and Ritchie, op. cit., p. 299.

<sup>84</sup>Ibid., p. 327. For similar listings, see Graham, Dodd, and Cottle, op. cit., p. 443 and Badger, Torgerson, and Guthmann, op. cit., p. 217. Others, while not enumerating the factors specifically, are obviously in agreement, as indicated by the amount of space devoted to these factors. See, for example, Latane and Tuttle, op. cit., pp. 277-281, 309-329, 405-427.

become qualitative.<sup>85</sup> Earnings per share is clearly an important element in common stock valuation, since three of these four factors are related to it.

Evidence of the importance that the financial community attaches to earnings per share is so extensive that it hardly needs documenting. One important segment of the financial community is investment banking. Its attitude toward the importance of earnings per share is expressed in the following statement:

We trust the Subcommittee fully recognizes the crucial importance of reported earnings per share data to equity security markets. . . . Earnings per share data have probably become the single most important statistic to market valuation. . . .<sup>86</sup>

As would be expected, practicing financial analysts also consider earnings per share a vital statistic in security valuation. Pankoff and Virgil of Washington University have conducted a laboratory experiment on the usefulness of financial accounting information to security analysts. Their subjects were 32 security analysts employed by retail brokerage firms, commercial banks, and other investment institutions located in St. Louis and New York. They measured the demand of these analysts for accounting and other financial information of three basic types: company, industry, and general economic. The most

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<sup>85</sup>Ibid.

<sup>86</sup>Memorandum from the Corporation Finance Committee of the Investment Bankers Association of America to the Subcommittee on Convertible Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 7, 1969.



frequently requested item of information was earnings per share.<sup>87</sup>

A recent development in the financial press contributes additional evidence of the importance that the investment community attaches to earnings per share and the related price-earnings ratio. On October 2, 1972 Associated Press began reporting the daily price-earnings ratios of some 3,350 issues listed on the New York and American Stock Exchanges as an addition to its daily price and volume information. Earnings per share used in the daily computations are reported earnings for the most recent twelve months. Many major newspapers including The Wall Street Journal and The New York Times have subscribed to the service.<sup>88</sup>

The reluctance of accountants to accept earnings per share as an important factor in security valuation has already been discussed. Their later decision to require earnings per share to be included on the income statement confirms the importance that investors have attached to it. Recognition of this fact is expressed by LeRoy Layton, Chairman of the Accounting Principles Board at the time APB Opinion No. 15 was written, in the following statement:

Many investors are more interested in results of future operations and look to the past only in the hope that it will predict the future. Rightly or wrongly, earnings per share and its directional trend have become the prime measuring factors in the eyes of most investors. The maintenance of a favorable trend in earnings per share has become all-important to management in today's rugged competition for capital. An upward trend favorably influences stock

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<sup>87</sup>Lyn D. Pankoff and Robert L. Virgil, "Some Preliminary Findings from a Laboratory Experiment on the Usefulness of Financial Accounting Information to Security Analysts," Empirical Research in Accounting: Selected Studies, 1970, Supplement (Journal of Accounting Research, VII, (1970)), 25.

<sup>88</sup>"The New PE Column in the Stock Tables," Business Week, September 23, 1972, pp. 71-72.

prices that have been so valuable in corporate acquisitions. Also, it affords, in a sense, job security for top management.<sup>89</sup>

Similarly, Arthur Andersen & Co., a major accounting firm, recognizes the importance placed on earnings per share in the following statement:

. . . While there may be an overemphasis on earnings per share and a general failure to consider adequately other financial statistics, earnings-per-share information is in fact used as a convenient common denominator in investment valuation. Since earnings per share would undoubtedly be computed by someone, perhaps incorrectly, it is probably best dealt with in most situations in the financial statements.<sup>90</sup>

The evidence presented has shown that earnings per share is an important statistic used in security valuation. The attributes of earnings per share which seem important to investors will now be determined through an analysis of how investors use the statistics in valuing common stocks.

#### Earnings per Share in Security Valuation

A survey of practitioners' stock valuation methods by Ralph A. Bing, an investment consultant to F. S. Smithers & Co., gives an indication of the variety of fundamental methods used and of the importance of earnings per share to each of these methods.<sup>91</sup> The respondents to his

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<sup>89</sup>Opinion expressed by LeRoy Layton, Chairman of the Accounting Principles Board of the American Institute of Certified Public Accountants, in an address ("Accounting Principles under Fire") at Louisiana State University in New Orleans, April 27, 1970.

<sup>90</sup>Arthur Andersen & Co., Objective of Financial Statements for Business Enterprises (Chicago: Arthur Andersen & Co., 1972), p. 75.

<sup>91</sup>Ralph A. Bing, "Survey of Practitioners' Stock Evaluation Methods," Financial Analysts Journal, XXVII (May-June, 1971), 55-60.

questionnaire included 31.5 percent of the 38 largest commercial banks and about 10 percent of the mutual funds with assets over \$200 million, as well as a variety of other institutions, including eight large foundations, universities, insurance companies, and company-managed pension funds of large industrial corporations. The questionnaire provided a choice of six fundamental methods of analysis, with space provided for the respondents to specify any other methods they might prefer. The methods enumerated by Bing were:

1. Estimate present value through discounting all future dividends.
2. Estimate present value through discounting future dividends and estimated market value at the end of a specified holding period.
3. Estimate total future return from dividends and capital gains for a specified holding period and compare with a normal return for the stock in question.
4. Compare present actual price-earnings multiple with a normal multiple.
5. Compare price-estimated future earnings multiple at the end of a specified holding period with a normal multiple of this type.
6. Compare multiple and growth of individual stock with an industry group multiple and growth.<sup>92</sup>

An overwhelming majority of the respondents, 74.8 percent, indicated a preference for one or more of the multiplier appraisal techniques. About 14.8 percent estimate future return and compare it with a normal return. Less than 6 percent use a present value technique and only 4.6 percent specified a method other than the six enumerated by Bing.<sup>93</sup>

Eighty-five percent of the respondents use more than one appraisal technique--an indication that the practitioner's approach to common stock

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<sup>92</sup>Ibid., 56.

<sup>93</sup>Ibid.

valuation is both flexible and pragmatic. This is affirmed by a comment of one of the respondents to Bing's questionnaire that "the analyst's job remains essentially an unstructured one, and analytical approaches are highly individualistic, eclectic and, therefore, somewhat unstable."<sup>94</sup>

Bing's findings confirm those of Morton Backer in his survey of financial reporting for security investment decisions. Backer interviewed 72 security analysts, of whom 50 were officers or partners in their respective firms--usually in charge of the investment research function. Backer found that the techniques for forecasting the probable future return from securities vary ". . . from simple capitalization of earnings per share at selected price/earnings multiples to sophisticated statistical methods and mathematical models."<sup>95</sup> He concluded: "Security valuation models employed by analysts indicate that future earnings is, by far, the most important determinant of the value of a share of common stock."<sup>96</sup>

The basic variable common to all six valuation techniques included in Bing's questionnaire is earnings per share. This is true even though Methods 1, 2, and 3 require estimates of future dividends per share. Since in the long run dividends are a function of earnings, the usual practice is to estimate future dividends per share by estimating future

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<sup>94</sup>Ibid.

<sup>95</sup>Morton Backer, Financial Reporting for Security Investment and Credit Decisions, (New York: National Association of Accountants, 1970), p. 15.

<sup>96</sup>Ibid., p. 16.

earnings per share and dividend payout ratios.<sup>97</sup>

In addition, all of the valuation techniques except Method 1 require an estimate of the security's sales price at the end of the holding period. This is explicit in Methods 2 and 3 and implicitly assumed in the multiplier techniques.<sup>98</sup> The estimation of this sales price is also heavily dependent upon earnings per share. A common practice is to apply an earnings multiple to estimated earnings per share for the terminal holding period.<sup>99</sup> The earnings multiplier or capitalization rate is subjectively determined by the quality of the earnings and the quality of the earnings is, to a large extent, a function of the volatility and growth rate of earnings per share.<sup>100</sup>

In summary, most valuation methods used in practice depend, directly or indirectly, upon (1) estimated future earnings per share and (2) a price-earnings multiplier or capitalization rate which is greatly influenced by the expected trend and variability of earnings per share. The methods by which investors estimate these factors will now be examined more closely.

Earnings per share estimates. A major criticism of multiplier

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<sup>97</sup>Badger, Torgerson, and Guthmann, op. cit., p. 230. An alternate method is to estimate dividends directly through an analysis of estimated cash flows. See Committee on External Reporting of the American Accounting Association, "An Evaluation of External Reporting Practices: A Report of the 1966-68 Committee on External Reporting," The Accounting Review, XLIV (Supplement, 1969), 83-88.

<sup>98</sup>Bing, op. cit., 58.

<sup>99</sup>Badger, Thorgeron, and Guthmann, op. cit., p. 231.

<sup>100</sup>Bellemore and Ritchie, op. cit., p. 282.

valuation methods is that they are so loosely structured that adequate consideration frequently is not given to all the factors implied in their usage. The practice of projecting future earnings per share as a simple extrapolation of past earnings per share is an example. Bellemore and Ritchie, in the following excerpt, imply that this procedure has been adopted by many analysts:

. . . many analysts in fact, although not admitting it, tend largely to extrapolate the going trend of earnings and dividends, correlating this with their quality classification of the company, and then to use these factors as a basis for selecting a capitalization rate for earnings (the price/earnings multiplier). However, the really successful investors and professional analysts are not those who largely extrapolate going trends, especially for those stocks and industries that are most popular at the moment. On the contrary, the most important successes of investors and analysts rest on their ability to anticipate a change in the trend of earnings for industries and companies and the rate of growth of earnings before such a change is anticipated by the market in general. . . .<sup>101</sup>

This practice of projecting past earnings-per-share trends into the future has an important implication for earnings-per-share computations involving warrants. The timing of the recognition of the dilution to earnings per share caused by the exercise of warrants is a factor which must be considered because this timing affects the trend and growth rate of the earnings per share that will be projected.

Backer found that the procedures used by the analysts he interviewed for forecasting earnings per share were similar to those used internally for budget preparation.<sup>102</sup> Sales are estimated first, based on the company's estimated share of the market, or based on the

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<sup>101</sup>Bellemore and Ritchie, op. cit., pp. 331-332.

<sup>102</sup>Backer, op. cit., p. 18.

historical sales trend modified by anticipated changes in the trend. Costs are then related to sales based on historical profit margins and operating ratios modified for the effect of expected changes in volume, prices, and costs.

Another method sometimes used by practicing analysts, and favored by academicians, is the return-on-investment approach.<sup>103</sup> Investment is usually defined as total capital, including long-term debt. This method has the advantage of focusing attention on the basic factors which influence profits--the rate of return on sales and the turnover of capital invested.

Although the two methods are not entirely independent of each other, using both techniques would allow a cross-check on the earnings-per-share estimates. Under either method, the projections are usually short-term, from one to three years.<sup>104</sup>

Capitalization rates. One of the reasons for estimating future earnings per share is that the process of estimation allows the analyst to form an opinion about the quality of earnings. The capitalization rate which will be applied to current or future earnings per share is a subjective function of earnings quality. Although the quality of earnings is affected by many intangible factors such as management capability, research and development prospects, accounting policy, and financial policy, it appears to be most heavily influenced by two variables--the

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<sup>103</sup>See, for example, Bellemore and Ritchie, op. cit., pp. 341-342 and Graham, Dodd, and Cottle, op. cit., pp. 409-410.

<sup>104</sup>Backer, op. cit., pp. 17-18.

trend and variability of the trend of earnings per share. Backer explains the relationship between the stability and growth rate of earnings per share and price-earnings multiples as follows:

In addition to the amount of annual earnings, the long-term trend and variations from this trend are variables, with a distinguishable effect on the market price of a stock. Thus stocks with a record of consistent and rapid growth in earnings tend to sell at higher P/E multiples than do stocks which have a record of slow growth or erratic profits. . . .<sup>105</sup>

Review of a number of research reports from various brokerage firms confirms these observations. The following excerpts are typical:

In view of the company's prospects for outstanding growth in per share earnings over the next several years, the stock of Hospital Corporation has the potential for above-average appreciation. Despite the premium multiple, some expansion in the price:earnings ratio appears possible given the company's exceptional earnings outlook, strong management and sound financial position.<sup>106</sup>

Projected earnings growth should average in excess of 20% annually over next three years, justifying premium multiple.<sup>107</sup>

The company's excellent outlook for earnings growth and the high quality of its profits as demonstrated in the current economic climate, warrant, in our opinion, a multiple of 25 times earnings.<sup>108</sup>

In Chapter 1, the apparent effect of the trend and variability of earnings per share on the price of Dr. Pepper and Royal Crown Cola

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<sup>105</sup>Ibid., p. 17.

<sup>106</sup>Research Department, F. I. duPont, Glore Forgan & Co., Hospital Corporation of America, April 13, 1971.

<sup>107</sup>Research Department, duPont Glore Forgan, Incorporated, Shapell Industries, May 18, 1971.

<sup>108</sup>Investment Research Department, E. F. Hutton & Company, Inc., Tandy Corporation, January, 1971.



shares was demonstrated.<sup>109</sup> The following example of a hypothetical situation illustrates the effect that one assumption as to the use of warrant proceeds has on the absolute amount of earnings per share and on its trend and variability. Assumptions are as follows:

1. Net income before interest and taxes is \$10,000,000 in Year 1 and increases 10 percent each year. The tax rate is 50 percent.
2. Six percent debentures in the principal amount of \$35,000,000 are outstanding.
3. Warrants to purchase 2,000,000 shares of common stock at \$15 per share are outstanding during Years 1-3.
4. Four million common shares are outstanding prior to exercise of the warrants.
5. The warrants are exercised at the beginning of Year 4 and the proceeds are used to retire debentures at par.

Earnings per common share are computed as follows:

|   | <u>Year 1</u>       | <u>Year 2</u>       | <u>Year 3</u>      | <u>Year 4</u>       |
|---|---------------------|---------------------|--------------------|---------------------|
| Net income before interest and taxes              | \$10,000,000        | \$11,000,000        | \$12,100,000       | \$13,310,000        |
| Interest  | <u>2,100,000</u>    | <u>2,100,000</u>    | <u>2,100,000</u>   | <u>300,000</u>      |
| Net income before taxes                           | \$ 7,900,000        | \$ 8,900,000        | \$10,000,000       | \$13,010,000        |
| Taxes   | <u>\$ 3,950,000</u> | <u>4,450,000</u>    | <u>5,000,000</u>   | <u>6,505,000</u>    |
| Net income  | <u>\$ 3,950,000</u> | <u>\$ 4,450,000</u> | <u>\$5,000,000</u> | <u>\$ 6,505,000</u> |
| Earnings per common share                         | \$0.99              | \$1.11              | \$1.25             | \$1.08              |
| Percent increase (decrease) over preceding period | 13.1                | 12.1                | 12.1               | (13.6)              |

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<sup>109</sup>See page 15.

If the assumption were made that warrants are exercised at the beginning of each period and that the proceeds earn at the interest rate on debt, net of tax effect, then earnings per common share and common share equivalents would have been as follows:

|  | <u>Year 1</u>      | <u>Year 2</u>      | <u>Year 3</u>      | <u>Year 4</u>      |
|--|--------------------|--------------------|--------------------|--------------------|
| Net income,<br>per above   | \$3,950,000        | \$4,450,000        | \$5,000,000        | \$6,505,000        |
| Adjustment for as-<br>sumed earnings on<br>warrant proceeds<br>(2,000,000 X \$15<br>X .03) | <u>900,000</u>     | <u>900,000</u>     | <u>900,000</u>     | <u>          </u>  |
| Adjusted net income  | <u>\$4,850,000</u> | <u>\$5,350,000</u> | <u>\$5,900,000</u> | <u>\$6,505,000</u> |
| <br>Earnings per common<br>share and common<br>share equivalents                           | <br>\$0.81         | <br>\$0.89         | <br>\$0.98         | <br>\$1.08         |
| <br>Percent increase<br>(decrease) over<br>preceding period                                | <br>(6.9)          | <br>9.9            | <br>10.1           | <br>10.2           |

The percentages of increase or decrease of earnings per share in Year 1 over the preceding year have been included for purposes of the discussion which follows. In computing these percentages, the assumption is that the debentures were issued with warrants attached at the beginning of Year 1 to refund a similar issue without warrants. If all other assumptions remain the same, then earnings per common share in the period preceding Year 1 would have been \$0.87.

This example demonstrates the effect that the timing of the recognition of the dilution caused by the exercise of warrants can have on the absolute amount, the trend, and the variability of earnings per share. Consider an investor who bases his investment decisions on a

simple extrapolation of past trends. Such an investor would give little consideration to future operating and financial changes which might affect earnings per share and share prices.

Assume that at the end of Year 2 this investor attempted to estimate share prices as of the end of Year 4. His estimate based on earnings per common share would probably be considerably higher than it would if he used earnings per common share and common share equivalents. In the first place, his projection of earnings per share in Year 4 would be higher because the earnings in the base years are higher (\$0.99 and \$1.11 versus \$0.81 and \$0.89). Secondly, his earnings projection would be higher because the trend as measured by the percentage of increase or decrease in earnings per share over preceding years is higher (13.8% and 12.1% versus -6.9% and 9.9%).

In arriving at his price estimate, the investor would also apply a higher multiple to his higher estimate of earnings per share in Year 4. The higher multiple is the result of two factors. First, the trend of earnings per common share is higher than the trend of earnings per common share and common share equivalents. Second, the variability of the trend is lower if he uses earnings per common share. A favorable trend and variability in the trend would impress the investor and cause him to compound his error by assigning a higher multiple to his higher estimate of earnings.

The preceding example, however, is only as good as its assumptions, one of which was that the warrants were exercised at the beginning of Year 4. If the warrants had expired without exercise, the investor's price estimate based on earnings per common share may well have been

closer to actual price in Year 4 than the estimate he would have made based on the projection of earnings per common share and common share equivalents. Thus, the frequency of exercise of warrant issues also has a bearing on earnings-per-share computations involving warrants. This problem will be considered in Chapter 3.

In summary, earnings per share is a vital statistic for many security valuation models. In the basic model, current or estimated future earnings per share is one of the two variables. The other variable is the earnings multiple or capitalization rate, the value of which is dependent, to a great extent, on the trend and variability of past and future earnings per share.

#### SIGNIFICANT ATTRIBUTES OF EARNINGS PER SHARE USED BY INVESTORS

In evaluating methods of computing the earnings per share of companies with warrants outstanding, certain attributes of earnings per share are important because they affect the value that investors place on common stocks. These attributes, which have been discussed extensively in this chapter, are summarized below.

1. The absolute amount of earnings per share in any given period is important because it is one of the variables used in many valuation models. As the preceding example demonstrated, the absolute amount of earnings per share is affected by the timing of the recognition of the dilution to earnings per share which might be caused by the exercise of warrants. Similarly, the absolute amount of earnings per share is affected by the assumption which is made as to the use of warrant proceeds.

It is a truism, of course, that the absolute amounts of earnings per share for successive periods affect the trend and variability of earnings per share which are discussed below.

2. The trend of earnings per share is an important attribute because investors use trend as a qualitative factor in their estimates of earnings multiples or capitalization rates. Investors place a higher value on an upward trend and a high growth rate of earnings per share than they do on a downward or erratic trend and a low growth rate. If warrants are exercised and are in fact dilutive, then trend during the period the warrants were outstanding is adversely affected unless recognition of the dilutive effect is given from the date of issue of the warrants. On the other hand, if recognition of the dilutive effect of warrants is given in the earnings-per-share computation from date of issue and the warrants expire without exercise, trend is also adversely affected. In such a case, the trend as measured by the percentage of increase in earnings per share is higher than would be justified by the facts. The overstated trend can be attributed to the lower base-period earnings per share which may result from the assumption that warrants are exercised. The frequency of exercise of warrant issues is therefore a factor to be considered in evaluating earnings-per-share computational methods involving warrants.

3. The variability of the trend of earnings per share is also a factor which affects common stock valuation. Investors place a higher multiple on earnings with a stable growth than they do on earnings with an erratic growth. Financial and market risk factors are therefore included in the earnings multiple or capitalization rate. Since the purpose

of security valuation models that utilize earnings per share is to predict subsequent market price (the dependent variable), earnings-per-share computational methods which allow the variability of trend (one of the independent variables) to be influenced by market price are questionable.

#### SUMMARY AND CONCLUSIONS

Prior to World War I common stocks as a class were not considered investments. During this period security analysis was based on the balance sheet. Many firms did not publish income statements and earnings-per-share statistics were not cited by financial publications.

Investor acceptance of common stocks as investments followed the publication of E. L. Smith's book in 1924. The emphasis of valuation methods shifted from the balance sheet to the income statement. More firms began publishing income statements, but generally the detail necessary to intelligently project the statements into the future was lacking. As a result, investors began projecting earnings per share and applying an earnings multiple to the projected earnings.

Earnings-per-share statistics were often misleading because the method of computation was not standardized. Accountants refused to include earnings per share in the financial statements because they did not wish to encourage valuation techniques based solely on earnings per share. However, accountants failed in this attempt and the earnings capitalization model is still a basic common stock valuation technique. With the increasing availability of financial information and improvements in income statement presentation, however, an assumption that more investors

now analyze the underlying variables affecting earnings per share appears logical.

After the stock market crash in 1929, academicians began research on common stock valuation models, market price behavior, and portfolio management. Present value theory, long used in bond analysis, was applied to common stock valuation. While the theory is accepted by most practicing analysts, it has not proved successful as a working model because of the impossibility of projecting cash flows for long periods into the future. Earnings per share is an important statistic in present value models, however, because dividends per share are usually predicted on the basis of estimated earnings per share and estimated dividend payout ratios.

Beginning with the 1950's, extensive empirical testing of the theory of random walks was performed. A market in which changes in stock prices are completely random implies a perfect market in which all information affecting security prices is available to all participants simultaneously. The empirical evidence indicates that common stock prices are sufficiently random to cast serious doubt on technical analysis techniques which rely on the past behavior of prices.

As a result of the random walk research, the efficient markets theory evolved. In such a market, an analyst using fundamental techniques can be successful if he is able to discover information not generally known to the investing public or if he can transform public information in some unique manner. Earnings per share continues to be one of the principal variables used by fundamentalists in these efforts.

In conclusion, earnings per share is a major input to investment decision making. The attributes of earnings per share used by investors are the absolute amount, the trend, and the variability of the trend. The absolute amount of earnings per share is one of the basic variables in the widely-used earnings capitalization model and the trend and variability are major factors influencing the value of the other variable--the capitalization rate. Any method of computing earnings per share involving warrants must be evaluated in terms of the effect it has on these attributes.

The next chapter will analyze the characteristics of warrants which are important to the computation of earnings per share. The guidelines for computing earnings per share of companies with warrants outstanding will be formulated from these characteristics and from the attributes of earnings per share developed in this chapter.



## Chapter 3

### THE CHARACTERISTICS OF WARRANTS

In the preceding chapter the attributes of earnings per share considered to be of importance to investors were determined through a survey of the earnings-per-share literature. Of equal importance in formulating guidelines for the computation of earnings per share of companies with warrants outstanding are the characteristics of warrants. These characteristics are examined in this chapter through an analysis of warrants listed on the American Stock Exchange.

After a brief review of the historical background of warrants, the warrants included in this study are described. The methods of issue and reasons therefor and the contractual provisions are analyzed next. Finally, the exercise experience of those warrants which expired during the period under study is determined. From these analyses, the characteristics of warrants which need to be considered in earnings-per-share computations are formulated.

### HISTORICAL BACKGROUND OF WARRANTS

Warrants have been used as a financing tool for many years. Hickman cites a warrant issue in 1906,<sup>1</sup> but Graham and Dodd attribute

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<sup>1</sup>W. Braddock Hickman, Statistical Measures of Corporate Bond Financing Since 1900 (Princeton, New Jersey: National Bureau of Economic Research, Princeton University Press, 1960), p. 210 as cited in Richard A. Stevenson and Joe Lovely, "Why a Bond Warrant Issue?" Financial Executive, XXXVIII (June, 1970), 17.

the first warrant issue to American Power and Light in 1911.<sup>2</sup> Regardless of their date or origin, warrants first became popular during the bull market of the 1920's. Hickman reported that 403 of the 450 warrant issues from 1900 through 1943 were offered between 1924 and 1931.<sup>3</sup>

The highly volatile nature of warrant prices and their typically rapid decline in value threw warrants into disrepute during the depression and war years of the 1930's and 1940's. Hayes and Reiling cite an example of investor experience with warrants during this period. American and Foreign Power Company warrants, which were attached to a \$270 million issue of second preferred stock, attained a market value in excess of a billion dollars during 1929. When recapitalization of the company was completed in 1952, the warrants were eliminated from the capital structure and became worthless.<sup>4</sup>

The next increase in warrant issues came during the bull market from 1959 to 1961. With the drop in the market which occurred in 1962, warrant issues again lagged until 1967. Interest in warrants has continued since that time with a record of 123 issues being established in 1969.<sup>5</sup> As would be expected, warrant issues appear to be most popular when stock prices are rising. The reason for this popularity is the

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<sup>2</sup>Benjamin Graham, David L. Dodd, and Sidney Cottle, Security Analysis: Principles and Technique (4th ed.; New York: McGraw-Hill Book Company, 1962), p. 656.

<sup>3</sup>Hickman, loc. cit., as cited in Stevenson and Lovely, loc. cit.

<sup>4</sup>Samuel L. Hayes, III and Henry B. Reiling, "Sophisticated Financing Tool: The Warrant," Harvard Business Review, XLVII (January-February, 1969), 138.

<sup>5</sup>P. Royer, "Long-Term Warrants as Financing Instruments," (unpublished Doctor's dissertation, The University of Michigan, 1970), p. 15.

leverage which warrants provide to investors. Successful leverage is dependent upon rising prices for the underlying common stock.

Other factors have also contributed to the current popularity of warrants. The tight-money situation which prevailed in 1968 and 1969 encouraged the use of warrants as a means of reducing interest and dividend payments. In other cases, financially weak companies were forced to add warrants or a conversion feature to their securities in order to obtain additional capital.

Increased merger activity has also led to more warrant usage. Conglomerates, in the highly competitive market for merger candidates, found that warrants offered in packages with other securities permitted greater flexibility in meeting the particular needs of the seller. Warrants, unlike convertible securities, were not considered residual under APB Opinion No. 9 and, therefore, did not enter into earnings-per-share computations until exercised. Conglomerates, being dependent upon continuing earnings-per-share growth for successful acquisitions, appear to have utilized warrants for this purpose in 1967 and 1968. The issuance of APB Opinion No. 15 in 1969 eliminated this advantage of warrants.

#### DESCRIPTION OF WARRANTS INCLUDED IN THIS STUDY

The determination of the characteristics of warrants that are important to earnings-per-share computations requires the analysis of a representative group of warrant issues. A description of the method of selection of the warrants included in this study and an analysis of the population selected by industry and date of issue follow.

### Selection of Warrants for Study

The leading exchange for warrant listings has traditionally been the American Stock Exchange, although in 1970 the New York Stock Exchange began listing warrants for the first time since 1919.<sup>6</sup> Because of the much more stringent listing requirements, few issues are listed on the New York Stock Exchange. Consequently, the American Stock Exchange is expected to remain the leading exchange for warrant listings.<sup>7</sup> A few warrant issues are also listed on the Pacific Coast Exchange and the Toronto Exchange.

The warrants chosen for analysis in this study are those listed on the American Stock Exchange. Unlike the New York Stock Exchange, the American Stock Exchange imposes no restrictions on the life of the warrants, the exercise price in relation to the market price of the underlying common stock, or the number of warrants issued in relation to the common shares outstanding on the warrant issue date. The major requirements of the American Stock Exchange are that the securities underlying the warrant issue be listed on the New York Stock Exchange or the American Stock Exchange and that the issue be for at least 500,000 warrants.<sup>8</sup> This study, therefore, includes a majority of the listed warrant issues.

In order to increase the number of issues studied and to gather data on characteristics related to the exercise of warrants, all warrants listed on the American Stock Exchange at any time during the period from

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<sup>6</sup>"Big Board, Breaking Tradition, Plans to List Long-Term Warrants," The Wall Street Journal, February 13, 1970, p. 6.

<sup>7</sup>Royer, op. cit., p. 116.

<sup>8</sup>Ibid., pp. 117-118.

January 1, 1950 through December 31, 1971 are included. Selection of listed warrant issues was made by examining American Stock Exchange transactions as published in The Wall Street Journal for warrants listed on January 2 of each year from 1950 through 1972. This method assures the inclusion of all warrants with the possible exception of those listed for part of one calendar year. The likelihood of a warrant issue being listed for less than one calendar year is remote.

Only warrants exercisable in common stock of the issuing company are included. This criterion eliminates secondary offerings which do not result in additional shares of common stock being issued. An example is the five-year registered warrants issued by Amerada Hess Corporation on June 15, 1971 to purchase Louisiana Land and Exploration Company common at \$40.50 per share. The exercise of these warrants will not result in the issuance of additional shares of Louisiana Land and Exploration Company because Amerada Hess holds 1,800,000 shares as an investment.

In order to determine whether warrant characteristics have changed over time, each characteristic analyzed is first classified by date of issue. The periods used for this classification are arbitrary, except for the years 1967-1968 and 1969-1971. This classification provides the basis for a comparison of the characteristics of warrants issued during the period when APB Opinion No. 9 was in effect with the characteristics of warrants issued during the period when APB Opinion No. 15 was in effect.

Some of the tables which follow refer to warrant series and the others refer to warrant issues. Warrants of the McCrory Corporation will be used to explain the difference between the two terms. On March 7,

1961 McCrory Corporation offered for each share of Lerner Stores common stock: (a) cash in the amount of \$33 or (b) \$40 principal amount of McCrory 4 1/2% subordinated debentures due 1976 and a warrant to purchase 1 1/2 shares of McCrory common at \$20 per share until March 15, 1976. This offer resulted in McCrory's issuing warrants to purchase 1,585,274 shares of its common.

Subsequently on June 21, 1961 McCrory merged H. L. Green Stores by exchanging for each H. L. Green common share 1/5 of a share of new \$100 par 4 1/2% cumulative convertible preferred B stock and a warrant to purchase 1 1/2 shares of McCrory common at \$20 per share until March 15, 1976. Warrants to purchase 1,091,580 shares were issued as a result of this exchange. Each of the preceding transactions resulted in a warrant issue, but because the terms of the warrants issued in both transactions are identical except for the date of issue, only one warrant series to purchase 2,676,854 common shares of McCrory Corporation is outstanding.

In a tender offer which expired on April 29, 1966 McCrory Corporation made an exchange offer to the security holders of S. Klein Department Stores which resulted in the issuance of warrants to purchase 2,986,955 McCrory common shares at \$20 per share to March 15, 1976 and at \$22.50 per share thereafter to March 15, 1981. This is a new warrant series because the terms are different from the first series. Following this transaction McCrory had two warrant series outstanding, but three separate warrant issues had occurred.

Some companies do issue warrants from a series on more than one occasion as is evidenced by the fact that this study includes 106 warrant issues from 94 warrant series. The 94 warrant series were issued by 90

companies with four companies having used two series of warrants either sequentially within the time span (one company) or concurrently.

Classification of Warrant Issuers  
by Industry

The classification of companies into industrial groups has become increasingly difficult in recent years due to the diversification policies followed by many companies. The industry classifications of Table 1 are those of The Value Line Investment Survey.<sup>9</sup> Those companies not included in The Value Line Investment Survey were classified into its industrial groups on the basis of their standard industrial classification codes as published in Standard & Poor's Corporate Directory.<sup>10</sup>

The most active warrant issuers, as shown by Table 1, are conglomerates with 19 issues, real estate investment trusts with 17, and holding and investment companies with 7. Warrants have, however, been used by a wide range of industrial groups. Table 1 includes 31 of the 68 groups in The Value Line Investment Survey. The major groups which have not used warrants appear to be those in old, well-established industries and those in industries where a few companies are dominant. These include tire and rubber, copper, steel, maritime, railroad, aluminum, railroad equipment, and tobacco.

In view of the previous discussion, the fact that conglomerates are the most active user of warrants is not surprising. Conglomerate

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<sup>9</sup>The Value Line Investment Survey (New York: Arnold Bernhard & Co., Inc., 1972).

<sup>10</sup>Standard & Poor's Corporation, Standard & Poor's Corporate Directory (New York: Standard & Poor's Corporation, 1972).

Table 1. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Industry and by Date of Issue

| Industry  | Number of Issues |               |               |               |               | Total |
|---|------------------|---------------|---------------|---------------|---------------|-------|
|   | Date of Issue    |               |               |               |               |       |
|   | Prior to<br>1950 | 1950-<br>1959 | 1960-<br>1966 | 1967-<br>1968 | 1969-<br>1971 |       |
| Aerospace   |                  | 1             |               | 1             |               | 2     |
| Air transport   |                  |               | 2             | 3             | 1             | 6     |
| Auto and truck  |                  | 1             |               |               |               | 1     |
| Auto parts  | 1                |               |               |               | 1             | 2     |
| Baking  | 1                |               |               | 1             |               | 2     |
| Building  |                  |               |               |               | 2             | 2     |
| Chemical  |                  |               | 1             |               |               | 1     |
| Conglomerate  |                  | 1             |               | 9             | 9             | 19    |
| Electrical equipment/<br>electronics                          |                  |               | 1             | 1             |               | 2     |
| Finance   |                  | 2             |               |               |               | 2     |
| Food processing   |                  |               |               |               | 2             | 2     |
| Holding and investment<br>companies, excluding<br>real estate | 3                | 1             |               |               | 3             | 7     |
| Leasing   |                  |               |               | 1             |               | 1     |
| Machinery   |                  | 3             | 1             |               | 2             | 6     |
| Meat packing  |                  | 1             |               | 1             | 1             | 3     |
| Metals and mining   |                  | 3             |               |               | 1             | 4     |
| Mobile homes  |                  |               | 1             |               |               | 1     |
| Natural gas   |                  |               |               |               | 1             | 1     |
| Office equipment/<br>computer                                 |                  | 1             |               |               |               | 1     |
| Packaging and container                                       |                  |               |               | 1             |               | 1     |
| Paper   |                  |               |               |               | 1             | 1     |
| Personal services   |                  | 1             |               | 1             |               | 2     |
| Petroleum   |                  | 1             |               |               | 2             | 3     |
| Precision Instruments   |                  |               |               | 1             |               | 1     |
| Real estate   |                  | 3             |               | 1             |               | 4     |
| Real estate investment<br>trusts                              |                  |               |               | 1             | 16            | 17    |
| Recreation  |                  |               | 1             | 2             |               | 3     |
| Retail stores   |                  |               | 3             | 1             | 1             | 5     |
| Telecommunications  |                  |               |               |               | 1             | 1     |
| Textile   |                  |               | 1             | 1             |               | 2     |
| Truck and bus lines   |                  |               |               | 1             |               | 1     |
| Totals  | 5                | 19            | 11            | 27            | 44            | 106   |

Source: Compiled from The Wall Street Journal, The Value Line Investment Survey, and Standard and Poor's Corporate Directory.



managements are aggressive and willing to assume risks, as evidenced by their acquisitions of other companies. Such managements are less likely to be averse to using warrants which involve much uncertainty for the issuer as well as the investor. However, since many conglomerate acquisitions depend upon consistently increasing earnings per share and APB Opinion No. 15 adversely affected the earnings per share of companies with warrants outstanding, the expectation would be that warrant issues by conglomerates would decline after the opinion was issued.

Further analysis shows this to be true. There were nine warrant issues by conglomerates during the 1967-1968 period and none in the previous period from 1960-1966. The indication is that some conglomerates used warrants instead of convertible debentures in their acquisitions after the publication of APB Opinion No. 9. They did this in order to take advantage of the fact that convertible debentures might be classified as residual securities and adversely affect earnings per share whereas warrants were excluded from the residual security category. Analysis of warrant issues early in 1969 reveals that four additional issues took place before management had knowledge of the adverse effect that warrants would have on earnings per share under APB Opinion No. 15. There were, then, really 13 warrant issues by conglomerates during the period in which APB Opinion No. 9 was in effect and only five issues under APB Opinion No. 15. Further, of the nine issues in Table 1 occurring between 1969 and 1971, seven occurred in 1969 and only two in 1971. While other factors such as interest rates may have been influential, the evidence presented here supports the premise that conglomerate management's financial decisions were influenced by accounting rule changes.

The major change which has occurred among warrant issuers since 1968 is the increase in warrant issues by real estate investment trusts. Sixteen of the seventeen issues by this group were made during the 1969-1971 period.

Real estate investment trusts were authorized by Congress in 1960 for the purpose of providing small investors an opportunity to invest in real estate. These trusts are similar to closed-end mutual funds, except that they invest in real estate rather than securities. They provide small investors with many of the advantages of mutual funds, such as diversification, pooling of resources, spreading of risk, professional management, and easy marketability through transferable shares or certificates of beneficial interest.<sup>11</sup>

Although real estate investment trusts were authorized in 1960, they did not become popular until the stock market decline of 1969-1970. Investors became interested in them as a means of achieving a more stable investment for income and capital gains, as a tax shelter, and as a hedge against inflation. Many of the real estate investment trusts in this study made their initial stock offerings in 1970. In order to sell the stock in a declining market, they attached warrants to the shares of beneficial interest. A typical offering included a three to five year warrant to buy an additional share, usually at the same price as the warrant-stock unit was offered.

By 1971 the price of some of these issues was above the exercise

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<sup>11</sup>Jay Drob, "What You Should Know about Real Estate Investment Trusts," The Practical Accountant, IV (May-June, 1971), 35.

price of the warrants.<sup>12</sup> In several of these trusts the number of warrants outstanding is equal to the number of shares outstanding. As a consequence, the dilution recognized in primary and fully diluted earnings per share is material. Since the trusts must distribute at least 90 percent of their ordinary income to shareholders in order to qualify and such distributions are on actual shares outstanding, dividends per share in some cases are higher than earnings per share although the distribution is from current earnings.

One additional characteristic of the industry groups in Table 1 requires investigation. Warrants are attractive to investors because the leverage that they offer over the related common stock can be used to amplify profits. One of the requirements for successful leverage is a fluctuation in the market price of the underlying common stock. Companies with highly volatile stock prices are more likely to issue warrants because their warrants would offer more leverage to investors. To verify this condition, the beta<sup>13</sup> factors of the companies included

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<sup>12</sup>M. H. Rich, "Will APB No. 15 Confuse Investors in REITs?" The Practical Accountant, IV (May-June, 1971), 39.

<sup>13</sup>Beta as computed by The Value Line Investment Survey is described as follows:

A measure of the sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Average. A Beta of 1.5 indicates a stock tends to rise (or fall) 1.5% with a 1% rise (or fall) in the New York Stock Exchange Composite Average. The 'beta factor' is derived from a least squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the New York Stock Exchange Average over a period of five years. In the case of shorter price histories, a smaller time period is used, but never less than two years.

See The Value Line Investment Survey (New York: Arnold Bernhard & Co., Inc., 1974), p. 225 of the October 11, 1974 Edition 1.

in The Value Line Investment Survey were analyzed. The median beta was 1.56 and the range was from .41 to 2.21. Only five of the 37 companies included in The Value Line Investment Survey had beta factors less than one. In other words, a one percent change in the level of the stock market would probably result in a 1.56 percent change in the common stock price of the median company which issues warrants. The conclusion is that most of the companies in this study do have volatile stock prices.

The volatility of stock prices of companies with warrants outstanding has implications for earnings-per-share computations of companies with warrants outstanding. Under the treasury stock method of APB Opinion No. 15, earnings per share varies inversely with the market price of the company's common stock.<sup>14</sup> The result is that variability is introduced into earnings per share solely as a result of the method of computation.

In summary, warrants have been issued by companies operating in a wide range of industrial groups. However, the stock prices of these companies are generally more volatile than those of the average company. Conglomerates have been most active in issuing warrants, particularly during the period when APB Opinion No. 9 was in effect. Many real estate investment trusts are currently issuing warrants with their common stock offerings. The nature of their operations points out a weakness in earnings per share as promulgated by APB Opinion No. 15. This

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<sup>14</sup>The treasury stock method of computing earnings per share is analyzed in Chapter 5.

weakness is one of the factors which must be considered in formulating guidelines for earnings per share computations.

#### METHOD OF ISSUE AND REASONS THEREFOR

Warrants are unlike most debt and equity securities because they are very seldom offered alone for cash.<sup>15</sup> Instead, they are usually attached to other securities to facilitate their sale or to reduce interest or dividends. Warrants are also used in acquisitions and reorganizations to provide a potential equity interest to the holders of the securities being acquired or exchanged. In short, warrants are not a direct source of capital when issued; they are a catalyst which management can use as an aid in raising capital from other sources.

Most of the warrants in this study were issued with another security in exchange for cash. As indicated by Table 2, 59 of the 106 issues, or 56 percent, were issued in this manner. Except for the period prior to 1950, this method of issue has dominated all others, and its frequency of use appears to be increasing.

The second most frequent use of warrants was for acquisitions. Warrants were issued alone or in conjunction with other securities 32 times, or 30 percent of the total issues, for the acquisition of the securities of another corporation. With the current decline in merger

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<sup>15</sup>Royer, in an analysis of 167 warrant issues, reports one instance in which warrants alone were offered for cash to an institutional investor and to a director of the company. See Royer, op. cit., p. 58. Schwartz advocates offering warrants alone for cash in public offerings in order to avoid the sale of common stock at a discount from market. See William Schwartz, "Warrants: A Form of Equity Capital," Financial Analysts Journal, XXVI (September-October, 1970), 87-101.

Table 2. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Use and by Date of Issue

| Uses of Warrants   | Number of Issues |           |           |           |           | Total | Percent of Total |
|--|------------------|-----------|-----------|-----------|-----------|-------|------------------|
|  | Date of Issue    |           |           |           |           |       |                  |
|  | Prior to 1950    | 1950-1959 | 1960-1966 | 1967-1968 | 1969-1971 |       |                  |
| 1. Issued as a unit with other securities for cash   |                  | 12        | 9         | 11        | 27        | 59    | 56               |
| 2. Issued alone or as a unit with other securities as part consideration for the securities of another corporation | 3                | 2         | 5         | 11        | 11        | 32    | 30               |
| 3. Issued alone or as a unit with other securities in exchange for other securities as part of a reorganization    | 2                | 2         |           | 1         | 3         | 8     | 7                |
| 4. Issued as a dividend to stockholders  |                  |           |           | 1         | 3         | 4     | 4                |
| 5. Other uses  |                  |           |           | 3         |           | 3     | 3                |
| Total  | 5                | 16        | 14        | 27        | 44        | 106   | 100              |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

activity, this method of issuing warrants has declined from 41 percent of the issues in 1967-1968 to 25 percent of the issues in 1969-1971.

Warrants were issued alone or in conjunction with other securities in exchange for other securities as part of a reorganization or recapitalization eight times, or 7 percent of the total issues. This is one of the oldest uses of warrants. The newest use of warrants is for a distribution to stockholders in lieu of or in addition to cash or stock dividends. Four issues, or 4 percent of the total issues, were for this purpose. Other uses accounted for 3 percent of the total. A more detailed discussion of these methods of issuing warrants follows.

#### Issued with Other Securities for Cash

The security most frequently offered with warrants in exchange for cash was straight debt, usually subordinated debentures. As shown in Table 3, 30 warrant issues out of 59, or 51 percent, were attached to non-convertible bonds.

There are two basic reasons for attaching warrants to bond issues. First, a straight bond might require an interest rate so high as to be unattractive to the lender. Lenders sometimes avoid making loans with high interest rates because of the implication that the lender is making loans that are too risky.<sup>16</sup> If attaching a warrant to the bond reduces the effective interest rate to a level acceptable by the lender, then the issuer has obtained funds which might otherwise have been unattainable.

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<sup>16</sup>Richard A. Stevenson and Joe Lovely, "Why a Bond Warrant Issue?" Financial Executive, XXXVIII (June, 1970), 17.

Table 3. Classification of Securities Issued with Warrants to Raise Cash by Type and Date of Issue; Fifty-Nine Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Type of Security | Number of Issues |           |           |           |           |       |                  |
|------------------|------------------|-----------|-----------|-----------|-----------|-------|------------------|
|                  | Date of Issue    |           |           |           |           | Total | Percent of Total |
|                  | Prior to 1950    | 1950-1959 | 1960-1966 | 1967-1968 | 1969-1971 |       |                  |
| Straight debt    |                  | 8         | 7         | 9         | 6         | 30    | 51               |
| Convertible debt |                  | 1         |           |           | 2         | 3     | 5                |
| Common stock     |                  | 3         | 1         | 1         | 19        | 24    | 41               |
| Other            |                  |           | 1         | 1         |           | 2     | 3                |
| Total            |                  | 12        | 9         | 11        | 27        | 59    | 100              |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

Second, straight-debt funds may be available at interest rates so high that they are unacceptable to the borrower. Payment of such high interest rates might be interpreted as a financial weakness of the borrower. Or, if the firm has liquidity problems, the lower interest rates provided by the bond-warrant unit may reduce the cash outflow to an acceptable level. Further, if the warrants are exercised, there will be an additional cash inflow.

The two reasons given for attaching warrants to straight debt are also applicable to convertible debt. What advantage does the bond-warrant unit have over a comparable convertible security? Opinions are varied. Stevenson and Lovely contend that a bond-warrant package can be issued at a higher price than an equivalent convertible bond because



of the additional options offered by the bond-warrant. These additional options are due to the separability of the bond and the warrant. A bond-warrant holder can: (1) sell the bond and hold the warrant, (2) hold the bond and sell the warrant, or (3) hold the bond and exercise the warrants. None of these options is available to the convertible bond holder.<sup>17</sup> In addition, convertible bonds usually have a call privilege which introduces uncertainty about the expiration date whereas very few warrant issues are subject to call.<sup>18</sup>

For these reasons, the number of shares offered in the warrant option per bond can be less than the number of shares contained in the conversion option per bond. At issue date, the conversion price of the bond multiplied by the number of shares equals the par value of the convertible bond. The only means by which the number of shares can be reduced is by increasing the conversion price. But the market tends to discount the conversion feature if the conversion price is placed too high. Hayes and Reiling found that the average conversion premium on a sample of convertible debentures sold in 1968 was 11.5 percent. They state that investment bankers use 10 to 15 percent as a working guide.<sup>19</sup>

The exercise value of warrants attached to a bond is seldom equal to the bond's par value. Hayes and Reiling found the relationship to be 65 percent in 1968.<sup>20</sup> Royer, in his study of 71 units issued between

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<sup>17</sup>Ibid., 18.

<sup>18</sup>Samuel L. Hayes, III and Henry B. Reiling, "Sophisticated Financing Tool: The Warrant," Harvard Business Review, XLVII (January-February, 1969), 148.

<sup>19</sup>Ibid., 142.

<sup>20</sup>Ibid.

1950 and 1969, found the ratio of the exercise value to the par value was 48 percent.<sup>21</sup> Since the issuer can vary the number of warrants offered with each bond, there is more flexibility in setting the exercise price. Table 7 on page 115 indicates that the median exercise price for the 30 straight debt-warrant units in this study was 4 percent above the market price of the related common stock on the issue date. But the range was very wide, from more than 25 percent below market to more than 25 percent above market.

Since fewer shares are optioned per bond in a bond-warrant unit than are optioned in an equivalent convertible bond, potential dilution of shares outstanding is greater if convertible bonds are employed. Hayes and Reiling imply that, as a result of less dilution in shares, there will also be less dilution in earnings per share.<sup>22</sup> Royer concludes that no such generalizations can be made.<sup>23</sup> By making certain restrictive assumptions, Royer demonstrates that earnings per share can be lower under the bond-warrant option than under the convertible bond option. But this occurs only when earnings per share before exercise or conversion is lower than earnings per share after exercise or conversion. In other words, neither the convertible bonds nor the warrants were dilutive to earnings per share.

What Royer has demonstrated is the effect of unfavorable leverage

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<sup>21</sup>P. Royer, "Long-Term Warrants as Financing Instruments," (unpublished Doctor's dissertation, The University of Michigan, 1970), p. 228.

<sup>22</sup>Hayes and Reiling, op. cit., 142.

<sup>23</sup>Royer, op. cit., pp. 229-232.

on earnings per share. When a company is in the unfortunate position of having a rate of return on assets that is lower than the interest rate on its debt then conversion of all bonds will increase earnings per share more than retirement of a portion of the bonds (40 percent in Royer's illustration) from warrant proceeds. The conclusion is that a bond-warrant issue will always produce less dilution in earnings per share than an equivalent convertible bond issue, provided that the proceeds from the warrants are employed in such a manner as to earn a rate of return that is equal to or greater than the interest rate that was paid on the bonds which were converted.

Theoretically, bond-warrant issues also have cash flow advantages over an equivalent convertible bond issue. There are two reasons. First, the bond discount deductible for tax purposes is likely to be greater in a bond-warrant issue because tax regulations require the proceeds to be allocated between the bond and the warrant. Regulations do not allow a similar allocation to the conversion option of a convertible security. The result is that the bond-warrant issue discount is likely to be greater, thus requiring less cash outflow for taxes.

Second, warrants will provide additional cash inflow if they are exercised. The terms of convertible bond issues generally do not provide for the payment of additional cash when the bonds are converted. However, the warrant issuer has very little control over the cash flow from warrant exercise. Generally a few warrants may be exercised each year, but most will not be exercised until the expiration date nears. There is, of course, the possibility that the warrants will not be exercised at

expiration because the market price of the stock may be below the exercise price.

Another minor advantage of warrants attached to bonds is that they may allow a firm to increase its financial leverage if the use of warrants has the effect of making an otherwise unsaleable issue saleable. The firm can control leverage subsequent to issue by retaining the right to accept bonds at par in the exercise of the warrants. Leverage might be important for a company which needs new funds but finds that its existing debt-equity ratio makes it difficult to obtain them.<sup>24</sup>

As shown in Table 3, warrants were attached to common stock in 24 of the 59 issues for cash. Their use for this purpose is increasing. In the 1969-1971 period, 70 percent of the issues were attached to common stock. Fourteen of these 19 issues were by real estate investment trusts.

Warrants are issued with common stock to avoid underpricing of a new common stock issue. Normally an issue of common stock must be offered at less than its current market value if it is to be successfully marketed. If the stock is fully priced when the new issue is offered, the current market price may have to be discounted by as much as 10 percent.<sup>25</sup> By attaching warrants to the issue, the common stock can be sold at market. Avoiding a discount from underpricing might be important if the company is planning to make acquisitions with its common stock within the near future.

When a warrant is attached to preferred stock, the dividend can

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<sup>24</sup>Richard A. Stevenson and Joe Lovely, "Why a Bond Warrant Issue?" Financial Executive, XXXVIII (June, 1970), 20.

<sup>25</sup>Hayes and Reiling, op. cit., 143.

be reduced which results in a reduction of cash outflows for dividends. The same effect can be achieved with common stock in that fewer shares of warrant-common stock units will be issued to produce a given amount of funds.

Issued Alone or with Other  
Securities as Part of the  
Consideration for the Securities  
of Another Corporation

Acquisition-oriented companies that use warrants as part of their offer have usually combined them with one other security. As indicated by Table 4, this was true for 65 percent of the issues. Warrants were most frequently attached to straight debt, although in the 1969-1971 period common stock was equally favored.

There appears to be a trend, however, toward more complicated exchanges. In the 1967-1968 period only about 9 percent of the issues involved warrants and two other securities. In the 1969-1971 period this increased to more than 45 percent of the cases. During this period, the preferred combination of securities was convertible debt and common stock.

There were two occasions when warrants were the only security offered in exchange for the securities of another corporation. In 1968 Ryder Systems, Inc. acquired M. and G. Motor Convoy, Inc. for cash and warrants. The warrants were privately held until 1971 when they were offered at \$27.50, which included a premium of \$2.50. In late 1969 Atlantic Richfield issued warrants to Gulf + Western Industries, Inc. in exchange for a warrant to purchase a similar number of Sinclair shares held by Gulf + Western. Gulf + Western and Atlantic Richfield had both

Table 4. Classification of Securities Issued with Warrants as Part of the Consideration for the Securities of Another Corporation by Number and Types of Securities and by Date of Issue; Thirty-two Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Number and Types<br>of Securities    | Number of Issues |               |               |               |               |       | Percent<br>of<br>Total |
|--------------------------------------|------------------|---------------|---------------|---------------|---------------|-------|------------------------|
|                                      | Date of Issue    |               |               |               |               | Total |                        |
|                                      | Prior to<br>1950 | 1950-<br>1959 | 1960-<br>1966 | 1967-<br>1968 | 1969-<br>1971 |       |                        |
| No other securities                  |                  |               |               | 1             | 1             | 2     | 6                      |
| One type of security                 |                  |               |               |               |               |       |                        |
| Straight debt                        |                  |               | 3             | 4             | 2             | 9     | 28                     |
| Convertible debt                     |                  |               |               | 2             |               | 2     | 6                      |
| Preferred stock                      |                  |               |               | 2             |               | 2     | 6                      |
| Convertible preferred<br>stock       |                  |               | 1             |               | 1             | 2     | 6                      |
| Common stock                         |                  | 2             | 1             | 1             | 2             | 6     | 19                     |
| Two types of securities              |                  |               |               |               |               |       |                        |
| Straight debt and<br>common stock    |                  |               |               |               | 1             | 1     | 3                      |
| Convertible debt and<br>common stock |                  |               |               |               | 3             | 3     | 10                     |
| Preferred and common<br>stock        | 3                |               |               |               |               | 3     | 10                     |
| Other combinations                   |                  |               |               | 1             | 1             | 2     | 6                      |
| Total                                | 3                | 2             | 5             | 11            | 11            | 32    | 100                    |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with Securities and Exchange Commission.

made tender offers to Sinclair stockholders, and Atlantic Richfield was the successful bidder.

Warrants are used in acquisitions and mergers because of the flexibility they offer. In the second half of the 1960's, merger activity increased to the extent that a seller's market existed. For an offer to be acceptable, it had to be ". . . tailored to meet the unique price, income, and tax objectives of the target company's security holders."<sup>26</sup> Warrants offered a means of meeting these objectives. During the 1967-1968 period when merger activity was at its peak, warrants offered equity participation to the sellers without an immediate adverse affect on earnings per share of the acquiring company. As previously discussed, convertible securities did not offer the same advantage.<sup>27</sup>

The following tabulation, prepared from The Value Line Warrant Service,<sup>28</sup> shows how valuable warrants were as a merger currency during 1968 and early 1969:

| <u>Acquiring Company</u> | <u>Acquired Company</u> | <u>Warrant Value as<br/>Percent of Total Value<br/>of Package (Estimated)</u> |
|--------------------------|-------------------------|---|
| Avco Corp.               | Seaboard Finance        | 41  |
| National General Corp.   | Great American Holding  | 38  |
| Loew's Theatres          | Lorillard               | 31  |
| AMK (United Brands)      | United Fruit            | 33  |
| Ling-Temco-Vought (LTV)  | Greatamerica            | 21  |

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<sup>26</sup>Ibid., 139.

<sup>27</sup>For support of this position, see Hayes and Reiling, op. cit., 143, Stevenson and Lovely, op. cit., 19, Royer, op. cit., p. 51.

<sup>28</sup>"The New Warrant Game," The Value Line Warrant Service, December 16, 1969, p. 1.

The competition between Bangor Punta and Chris-Craft in their efforts to acquire Piper Aircraft Corporation illustrates the role warrants have played in acquisitions. In May, 1969 Bangor Punta announced an agreement to acquire more than 500,000 shares of Piper from the Piper family. Included in the deal were warrants to purchase 1,100,000 shares of Bangor Punta common. Chris-Craft had previously made a public offer for Piper shares by tendering one share of its \$2 preferred and a warrant to buy two Chris-Craft common shares at \$25 per share for each Piper common share. As a result of the Bangor Punta announcement, Chris-Craft raised its offer by adding \$10 cash to the previous offer.

Any acquisition which includes warrants or convertible debt offered in exchange for common stock precludes a tax-free transaction, as explained by Hayes and Reiling:

In an exchange for common stock, preferred stock, whether convertible or nonconvertible, constitutes a continuing equity interest for tax purposes; whereas debentures, whether nonconvertible or convertible, are debt. A warrant is only a contract right to purchase common stock, and therefore is not an equity interest.<sup>29</sup>

However, bond-warrant units offered in exchange for common stock can result in the deferral of tax, provided the exchange qualifies as an installment sale. The requirements are:

. . . To qualify as an installment sale, the sales price must exceed \$1,000 and not more than 30 percent of the sales price must be received by the seller in the year of sale. Since the Internal Revenue Service considers the bond portion of the bond-warrant unit as payment received when the bond is disposed of rather than in the year of sale, the seller will be able to postpone part of the tax on his capital gain, so long as the fair market value of

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<sup>29</sup>Hayes and Reiling, op. cit., 146.



the warrant segment of the bond-warrant package does not exceed 30 percent of the total package.<sup>30</sup>

A convertible bond offers even more deferral possibilities than the bond-warrant unit because no allocation of the option is required. Offsetting this advantage, however, is the flexibility offered by the bond-warrant unit. Should the seller need funds, he can sell the warrants and continue to hold the bonds, an option not available to the convertible bond holder.

Issued Alone or with Other  
Securities in a Reorganization  
or Recapitalization

One of the oldest uses of the warrants included in this study is for reorganizations and recapitalizations. Warrants are recognized as useful for this purpose as a means of giving former common stockholders, who would otherwise be eliminated in the recapitalization, a potential equity interest in the recapitalized firm.

An example is the recapitalization plan of Ward Baking Company (now Ward Foods, Inc.). On September 15, 1945 a recapitalization plan was placed into effect which exchanged for each \$7 preferred share 1/4 share of new 5 1/2% voting cumulative preferred, par \$100 and 2 1/2 shares of \$1 par common stock. Each class A common share received one share of the new \$1 par common and a warrant to purchase one common share at \$12.50 until March 31, 1951 and at \$15 thereafter until April 1, 1956. Each two class B common shares received one warrant of the same series. The class B common stockholder was therefore able to recoup the value

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<sup>30</sup>Stevenson and Lovely, op. cit., 18.

of 1/2 a warrant from his investment where otherwise he would probably have received nothing.

More recently warrant issues have been used to reduce debt and simplify capital structure. For example, Whittaker Corporation used this device to redeem \$43,000,000 of debentures with \$21,500,000 of subordinated debentures. It offered a unit consisting of \$500 principal amount of 10% subordinated debentures due 1988 and warrants to purchase 40 shares at \$50 per share for each \$1,000 principal amount of 4 1/2% debentures.

#### Issued as a Dividend

One of the newest uses of warrants is as dividend distributions to stockholders. Four such issues, all of which occurred in late 1968 or early 1969 prior to the release of APB Opinion No. 15, are included in this study. Four other issues were made during this period but they are not included in this study because they have not been listed on the American Stock Exchange.

While the argument might be advanced that warrants are issued with debt primarily for the purpose of negotiating lower interest rates, no such argument is feasible for warrants distributed to stockholders. Theoretically, there is no dilution of the stockholder's interest because the distributions are pro rata. If the stockholders sell their warrants, they are not getting something for nothing because they are giving up a right which may have substantial value in the future and which may reduce their proportionate investment in the company if it prospers.<sup>31</sup>

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<sup>31</sup>"The New Warrant Game," The Value Line Warrant Service, December 16, 1969, p. 2.

Warrant distributions to stockholders may be compared to stock dividends. The initial conclusion might be that such distributions are inferior to stock dividends because the stockholder is required to pay cash before obtaining the additional stock. However, warrant distributions do not dilute earnings per share as long as the exercise price is above the market price of the underlying common. In addition, warrants do not require a larger cash dividend outlay until exercise. Stock dividends will increase cash outflows immediately if the same dividend per share is maintained.

Neither stock dividends nor warrant dividends reduce the stockholders' prorata interest in the company. If the additional shares received as a stock dividend are sold, then a reduction of the seller's interest has occurred. But the sale of warrants received as dividends does not have the same immediate effect. There is no reduction in the proportionate interest in the company and there will be none until the warrant is exercised. If the warrant is not exercised, there is no dilution of the seller's prorata interest or of earnings per share. In addition, the stockholder has received a premium from the sale of his warrants.

Warrant distributions to stockholders may also be compared to rights offerings to subscribe to additional shares of stock. Rights offerings fill an immediate requirement for additional capital because they are short-term options which usually run for no more than 45 days. If the stockholder exercises his rights, then there is no change in his proportionate interest in the company.

Unlike rights offerings, the distribution of warrants to stockholders will not provide additional capital for several years, if at all. In fact, there may be no need for additional equity capital when the warrants are exercised. Further, management can hardly justify setting a price currently for the equity capital it plans to raise several years in the future. An exercise price set currently may have no relation to the stock's future value.

Schwartz has concluded that the purpose of these dividend warrants was to establish a market for them.<sup>32</sup> They could then be used as a merger currency in future acquisitions. The facts gathered in this study support this theory. Bangor Punta issued its Series C warrants as a distribution to its stockholders in February, 1969. In May, 1969 it used them in the acquisition of Piper Aircraft Company. Ward Foods, Inc. and U. S. Smelting & Mining Co. (U-V Industries, Inc.) have both attempted, unsuccessfully, to negotiate mergers with warrants originally issued as dividends. Whittaker Corporation issued warrants to its stockholders as a dividend in March, 1969. Although Whittaker Corporation has not used these warrants in an acquisition, it did use them to redeem its subordinated debentures.<sup>33</sup>

#### Other Uses

Three warrant issues in this study are rather unusual and will be discussed briefly. In 1968 Fibreboard Corporation issued 10-year

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<sup>32</sup>William Schwartz, "Warrants: A Form of Equity Capital," Financial Analysts Journal, XXVI (September-October, 1970), 98.

<sup>33</sup>See pages 100 and 101.

warrants to purchase 729,222 of its shares at \$22.50 and paid cash of \$41,018,760 to Tenneco, Inc. in exchange for 1,823,056 of its shares held by Tenneco.<sup>34</sup> The warrants were subsequently listed after a secondary offering by Tenneco in June, 1969.

During fiscal 1968 and 1969, Gulf + Western Industries, Inc. issued to certain key employees under a restricted warrant plan approximately 500,000 warrants to purchase its stock at \$55 per share. Such a plan appears to have some advantages over a qualified stock option plan. Although the employee must pay income tax on the market value of the warrant at date of receipt (a deductible expense for the issuing company), appreciation recognized on the sale of the warrants is a capital gain if the warrants are held for six months. Stock acquired through a qualified stock option plan must be held for at least three years before it receives capital gains treatment.

Another advantage of warrants is their negotiability. Rather than borrowing money to exercise stock options under a qualified plan and then selling much of the acquired stock to pay the loan, an employee granted warrants can exercise a portion of the warrants and sell the others.

In late 1968 LTV, Inc. (Ling-Temco-Vought, Inc.) issued warrants in a package designed to improve earnings per share and to increase the company's borrowing capacity. The company offered 1.1 units consisting of 1 share of Braniff Airlines special stock, Class A; 0.6 shares of National Car Rental special stock, Class A; 0.33 shares of Computer Technology, Inc. common stock; and 1.1 warrants to purchase LTV common stock

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<sup>34</sup>These figures reflect a 2 for 1 stock split made on November 1, 1968.

at \$101.96 (as adjusted) per share until January 15, 1978 in exchange for a share of LTV common stock. The company also offered various multiples of the same unit for approximately \$250 million of its debt securities. Nearly 2,000,000 shares were acquired in this offer. The result was that the outstanding shares were reduced by about 50 percent, but the potential dilution of outstanding shares through the exercise of warrants is approximately 60 percent.

This warrant issue appears to have been designed specifically to take advantage of APB Opinion No. 9 by substituting warrants for common stock.<sup>35</sup> Unfortunately, the reduction in shares came during the period when the company began experiencing losses and resulted in an increase of the net loss per share rather than the anticipated increase in earnings per share. If the company returns to a profit position, common stock equivalents under APB Opinion No. 15, assuming the exercise price of the warrants is less than the market price of the common, will reduce earnings per share and thus defeat one of the purposes of reacquiring the shares.

In summary, warrants have been issued in a variety of methods, but they are usually attached to other securities. Only two cases were encountered in which warrants were issued alone in exchange for other securities. Warrants have been issued alone as distributions to stockholders prior to the release of APB Opinion No. 15, apparently to take advantage of the provisions of APB Opinion No. 9. There were no cases

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<sup>35</sup>Samuel L. Hayes, III and Henry B. Reiling, "Sophisticated Financing Tool: The Warrant," Harvard Business Review, XLVII (January-February, 1969), 143.

in which warrants were issued alone to raise cash, although this use has been advocated.<sup>36</sup>

The primary purpose of issuing warrants does not appear to be that of raising equity capital. The basic reason for attaching warrants to securities issued to raise cash is to facilitate the sale of the issue. The warrants add value to the package and make it more attractive to investors. Consequently a company which might otherwise have been unable to do so is able to successfully float a security issue. The results of attaching warrants are reflected in a lower interest or dividend rate and in the higher value received from the sale of the securities.

The primary reason for issuing warrants in a merger agreement also appears to be that of facilitating the agreement. Warrants add value to the total package and offer a potential equity interest in the acquiring corporation to security holders of the acquired corporation. Further, under APB Opinion No. 9, dilution of earnings per share would not be reflected until the warrants were exercised.

In recapitalizations and reorganizations warrants are also used to make the deal more palatable to security holders whose interests are being reduced or eliminated. In particular, common stockholders can be issued warrants as a means of retaining a potential equity interest if the common stock is being eliminated in the reorganization.

The establishment of a merger currency appears to have been the major reason for issuing warrants as dividends. If the warrants were issued in lieu of a stock dividend, they had the additional advantage,

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<sup>36</sup>See footnote 15, page 88.

under APB Opinion No. 9, of not being dilutive to earnings per share until exercised. Even under APB Opinion No. 15, warrants are not dilutive until the market price of the common stock exceeds the exercise price of the warrants. In addition, warrants do not require an immediate increase in cash outflows for dividends. Stock dividends do require additional funds for dividends if the same dividend rate is to be maintained.

The conclusion is that management does not issue warrants for the purpose of raising future equity capital. Yet, by the inherent nature of the warrant instrument, equity capital which may result in the dilution of earnings per share will be raised at some future date if the warrants are exercised. This point must be considered in formulating guidelines for earnings-per-share computations.

#### CONTRACTUAL PROVISIONS OF WARRANTS IN THE STUDY

Management has great flexibility in setting the terms of warrant contracts. Warrants can be tailored to fit the financial requirements of a company through such contractual provisions as: (1) the exercise price, (2) escalations in the exercise price, (3) the means of payment of the exercise price, (4) the warrant life, and (5) the anti-dilution provisions. Once the warrants have been issued, however, management loses practically all control over the warrants as they become subject to the whims of warrant holders and the market place. The contractual provisions of the warrants in this study are analyzed in this section.



### Exercise Price

A basic consideration in setting the exercise price of a warrant is the market price of the underlying common stock. The lower the exercise price in relation to the common price, the greater will be the initial value of the warrant. Consequently, fewer warrants will have to be issued in a given transaction and the potential dilution of shares outstanding will be lower.

No such generalization can be made about the potential dilution of earnings per share. Dilution of earnings per share will occur when the percentage increase in shares outstanding from warrants exercised is greater than the percentage increase in earnings from the warrant proceeds. Whether issuing fewer warrants with a lower exercise price or more warrants with a higher exercise price results in more or less dilution of earnings per share depends upon four factors. These factors are: (1) the rate being earned on assets already invested, (2) the rate earned on warrant proceeds, (3) the number of common shares outstanding prior to the exercise of warrants, and (4) the number of shares issued for warrants. Under certain conditions, issuing fewer warrants at a lower exercise price will result in less dilution; under other conditions the result will be higher dilution than if more warrants were issued at a higher exercise price.

The original warrant holder, whether he received the warrants attached to securities he purchased, through an exchange of securities he held, or through a dividend, is interested in the total value he receives in exchange for the consideration given. He is, therefore, probably not concerned with whether he receives a smaller number of warrants

with a lower exercise price or a larger number of warrants with a higher exercise price as long as the total value is the same. But subsequent investors in the warrants would prefer warrants having high leverage. Leverage is highest when the exercise price is high in relation to the market price of the common. This relationship is demonstrated in the following analysis of the warrant, stock, and exercise price relationships of Molybdenum Corporation of America:

| <u>Date</u> | <u>Exercise<br/>Price/<br/>Common<br/>Price<br/>(Percent)</u> | <u>Common Stock</u> |   | <u>Warrants</u>             |   | <u>Leverage<br/>Ratio (Percent<br/>Over<br/>Warrant Price<br/>Increase/<br/>Percent Common<br/>Price Increase)</u> |
|-------------|---|---------------------|---|-----------------------------|---|--|
|             |   | <u>Price</u>        | <u>Increase<br/>Over<br/>Preceding<br/>Period<br/>(Percent)</u> | <u>Price<br/>(Adjusted)</u> | <u>Increase<br/>Over<br/>Preceding<br/>Period<br/>(Percent)</u> |  |
| 10/23/57    | 190.5   | \$15.750            |   | \$ 3.500                    |   |  |
| 12/31/57    | 167.8   | 17.875              | 13.5  | 6.125                       | 75.0  | 5.6  |
| 12/31/58    | 79.2  | 37.625              | 110.5   | 21.163                      | 245.5   | 2.2  |
| 12/31/59    | 54.6  | 53.875              | 43.1  | 36.516                      | 72.7  | 1.7  |

Molybdenum set its exercise price at \$30 which was high in relation to the stock price. The result was that warrant holders benefited from high leverage. During the period from October 23, 1957, when the warrants were listed, to December 31, 1957, the warrant price increased 5.6 times as rapidly as the stock price. Had the exercise price been set below the market price, as would have been the case at December 31, 1958, leverage would have been considerably reduced. During the succeeding year, the market price of the warrants increased only 1.7 times as fast as the common price.

As the preceding discussion points out, the relationship of the exercise price to the market price of the underlying common stock on the date of issue influences the value that the warrant will add to the total

package of securities being offered. Subsequent changes in the exercise price will also affect the value of the warrant and may induce exercise prior to the expiration date of the issue. In addition, the value of the warrant is affected by the method of payment of the exercise price. A discussion of these aspects of the exercise price follows.

Exercise price in relation to the market price of the common on date of issue. In this study, the exercise price of 106 warrant issues was compared to the market price of the underlying common stock on the approximate date of issue. In a few cases, predominantly real estate investment trusts, prices were not available on the date of issue because the firms had not yet qualified for listing on an exchange. In these cases the average of the over the counter high and low prices for the period in which the issue occurred was used. The resulting bias is not material because the range, as measured by the difference between the high and the low price, was small.

Warrant issuers in the period from 1950 to 1972 have tended to set the exercise price at about 110 percent of the market price of the related common stock on the date of issue, as shown in Table 5. The median was below this amount in only one period, 1967-1968, when it was 103 percent. The decrease in this period is attributable to several warrant issues in which warrants were used as a merger currency. Included in the 1967-1968 period are National General Corporation's merger of Great American Holding, Lowe's Theatres' merger of Lorillard, and Ling-Temco-Vought's merger of Greatamerica.<sup>37</sup> These companies and others

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<sup>37</sup>See page 98.

Table 5. Comparison of the Initial Exercise Price of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 with the Price of the Related Common Stock on the Approximate Date of Issue of the Warrants, by Date of Issue

| Exercise Price as a<br>Percentage of the<br>Stock Price | Number of Issues |               |               |               |               |       |                        |
|---|------------------|---------------|---------------|---------------|---------------|-------|------------------------|
|   | Date of Issue    |               |               |               |               | Total | Percent<br>of<br>Total |
|   | Prior to<br>1950 | 1950-<br>1959 | 1960-<br>1966 | 1967-<br>1968 | 1969-<br>1971 |       |                        |
| Less than 75 percent                                    |                  | 1             | 1             | 2             |               | 4     | 4                      |
| 75 percent to 84 percent                                |                  |               |               | 2             | 2             | 4     | 4                      |
| 85 percent to 94 percent                                | 1                | 1             | 1             | 4             |               | 7     | 7                      |
| 95 percent to 104 percent                               |                  | 2             | 2             | 8             | 12            | 24    | 23                     |
| 105 percent to 114 percent                              |                  | 7             | 4             | 7             | 10            | 28    | 26                     |
| 115 percent to 124 percent                              |                  | 2             | 2             | 2             | 7             | 13    | 12                     |
| 125 percent to 134 percent                              | 1                |               | 2             | 2             | 4             | 9     | 8                      |
| 135 percent or more                                     | 3                | 3             | 2             |               | 9             | 17    | 16                     |
| Total   | 5                | 16            | 14            | 27            | 44            | 106   | 100                    |
| Median  | 139%             | 110%          | 112%          | 103%          | 113%          | 110%  |                        |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

chose to increase the value of the warrants in the security package offered the acquired company's stockholders by setting the exercise price low in relation to the related common price.

The increase in the median to 113 percent in the 1969-1971 period is caused by the 16 real estate investment trust issues included. These trusts, with a median of 116 percent, tended to set the exercise price higher than the median for the group.

As indicated by Table 6, the exercise price is usually set low in relation to the market price of the common stock when warrants are attached to another security and the package is offered for cash. The median exercise price was 7 percent above the market price of the related common stock on date of issue. In contrast, when warrants are issued as part of a reorganization or recapitalization, the median exercise price was 35 percent above the market price of the common on the date of issue of the warrants. The exercise price is also generally set high when warrants are issued as a dividend to stockholders.

These differences in median exercise prices suggest that management is less concerned with the value that warrants add to the package when it is dealing with its own security holders than when it is offering securities to the public. Ceteris paribus, those warrants with an exercise price that is high in relation to the underlying common price are less likely to be exercised. The result is that management, in its efforts to obtain current funds, pursues a financial policy likely to dilute the equity of current stockholders for the benefit of future stockholders who exercise the warrants attached to the financing instrument.

Table 6. Comparison of the Initial Exercise Price of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 with the Price of the Related Common Stock on the Approximate Date of Issue of the Warrants, by Use

| Exercise Price as a<br>a Percentage of<br>the Stock Price | Number of Issues                       |   |  |                       |       | Total |
|---|--|---|--|-----------------------|-------|-------|
|   | Use                                    |   |  |                       |       |       |
|   | As Part<br>of a<br>Unit<br>for<br>Cash | As Part<br>of the<br>Consid-<br>eration<br>for the<br>Securi-<br>ties of<br>Another<br>Corpo-<br>ration | As Part<br>of a<br>Recapi-<br>taliza-<br>tion or<br>Reor-<br>ganiza-<br>tion | As a<br>Divi-<br>dend | Other |       |
| Less than 75 percent                                      | 3                                      | 1   |  |                       |       | 4     |
| 75 percent to 84 percent                                  | 3                                      |   |  |                       | 1     | 4     |
| 85 percent to 94 percent                                  | 2                                      | 5   |  |                       |       | 7     |
| 95 percent to 104 percent                                 | 17                                     | 4   | 1  | 1                     | 1     | 24    |
| 105 percent to 114 percent                                | 18                                     | 7   | 1  | 1                     | 1     | 28    |
| 115 percent to 124 percent                                | 8                                      | 3   | 1  | 1                     |       | 13    |
| 125 percent to 134 percent                                | 5                                      | 3   | 1  |                       |       | 9     |
| 135 percent or more                                       | 3                                      | 9   | 4  | 1                     |       | 17    |
| Total   | 59                                     | 32  | 8  | 4                     | 3     | 106   |
| Median  | 107%                                   | 113%  | 135%   | 119%                  | 105%  | 110%  |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

Further analysis of warrant-security units offered for cash, as shown in Table 7, discloses that the exercise price was set lower when the warrants were attached to a debt instrument than when attached to common stock. The median exercise price was 4 percent above the related common price when the warrant was attached to straight debt and 16 percent above the related common price when attached to common stock. This is further confirmation of the earlier point that management's financial policy with regard to warrants favors future stockholders to the detriment of current stockholders.<sup>38</sup> This policy has special significance for companies with common stock having preemptive rights. Theoretically these stockholders would suffer no dilution through a warrant-common stock offering because they have the opportunity to purchase their pro rata share of the new common being issued. But common stockholders do not have these preemptive rights when warrants are attached to straight debt. These warrants, however, have a lower exercise price and are therefore more likely to be exercised and cause dilution.

Management also establishes a lower exercise price in relation to the common price when it issues a warrant-straight debt unit for the securities of another corporation. In Table 8, the median exercise price is 18 percent above the market price of the related common when the warrant is attached to a straight-debt instrument. But if the warrant is attached to common stock, the median exercise price is 30 percent above

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<sup>38</sup>This statement assumes alternate methods of financing which are not potentially dilutive are available. If a company is in such dire need of funds that it can avoid bankruptcy only by selling a warrant-security issue, then current stockholders may be benefited despite the future dilution to their equity.

Table 7. Comparison of the Initial Exercise Price of Warrants Issued with Securities to Raise Cash with the Price of the Related Common Stock on the Approximate Date of Issue of the Warrants, by Type of Security; Fifty-nine Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Exercise Price as a Percentage of the Stock Price | Number of Issues |                  |              |       |       |                  |
|---|------------------|------------------|--------------|-------|-------|------------------|
|   | Type of Security |                  |              |       | Total | Percent of Total |
|   | Straight Debt    | Convertible Debt | Common Stock | Other |       |                  |
| Less than 75 percent                              | 3                |                  |              |       | 3     | 5                |
| 75 percent to 84 percent                          | 3                |                  |              |       | 3     | 5                |
| 85 percent to 94 percent                          | 1                | 1                |              |       | 2     | 3                |
| 95 percent to 104 percent                         | 10               |                  | 7            |       | 17    | 29               |
| 105 percent to 114 percent                        | 10               | 2                | 4            | 2     | 18    | 31               |
| 115 percent to 124 percent                        | 2                |                  | 6            |       | 8     | 14               |
| 125 percent to 134 percent                        | 1                |                  | 4            |       | 5     | 8                |
| 135 percent or more                               |                  |                  | 3            |       | 3     | 5                |
| Total   | 30               | 3                | 24           | 2     | 59    | 100              |
| Median  | 104%             | 108%             | 116%         | 107%  | 107%  |                  |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.



Table 8. Comparison of the Initial Exercise Price of Warrants Issued with Securities as Part of the Consideration for the Securities of Another Corporation with the Price of the Related Common Stock on the Approximate Date of Issue of the Warrants, by Number and Types of Securities; Thirty-Two Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Exercise Price as<br>a Percentage of<br>the Stock Price | Number of Issues               |                  |                 |       |   |                                     |       |                        |       |
|---|--------------------------------|------------------|-----------------|-------|---|-------------------------------------|-------|------------------------|-------|
|   | Number and Types of Securities |                  |                 |       |   |                                     | Total | Percent<br>of<br>Total |       |
|   | No Other<br>Security           | One Type         |                 |       | Two Types                                     |                                     |       |                        |       |
|   |                                | Straight<br>Debt | Common<br>Stock | Other | Convertible<br>Debt<br>and<br>Common<br>Stock | Preferred<br>and<br>Common<br>Stock |       |                        | Other |
| Less than 75 percent                                    |                                | 1                |                 |       |   |                                     |       | 1                      | 3     |
| 75 percent to 84 percent                                |                                |                  |                 | 4     |   | 1                                   |       | 5                      | 16    |
| 85 percent to 94 percent                                |                                | 1                | 2               |       | 1   |                                     |       | 4                      | 13    |
| 95 percent to 104 percent                               | 2                              | 2                |                 | 1     |   |                                     | 2     | 7                      | 22    |
| 105 percent to 114 percent                              |                                | 2                | 1               |       |   |                                     |       | 3                      | 9     |
| 115 percent to 124 percent                              |                                | 1                |                 | 1     |   |                                     | 1     | 3                      | 9     |
| 125 percent to 134 percent                              |                                | 2                | 3               |       | 2   | 2                                   |       | 9                      | 28    |
| 135 percent or more                                     |                                |                  |                 |       |   |                                     |       |                        |       |
| Total   | 2                              | 9                | 6               | 6     | 3   | 3                                   | 3     | 32                     | 100   |
| Median  | 113%                           | 118%             | 130%            | 92%   | 161%  | 166%                                | 110%  | 113%                   |       |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

the market price. If the warrant is issued in combination with both preferred and common stock, the median exercise price is 66 percent above the related common price.

The potential life span of the warrant issue also appears to have some influence on the setting of exercise prices. As indicated in Table 9, the median exercise price in relation to the common price on the date of issue is higher for warrant issues with extremely short and extremely long life spans. The perpetual warrants in this study have a median exercise price 41 percent above the market price of the common. Similarly, warrants with a life span of less than four years have a median exercise price 31 percent above the common price.

Companies issuing perpetual warrants would be expected to set the exercise price high in relation to the market price of the common. If this were not done, the warrants would soon lose their attractiveness to investors; with the rise in the price of the common over time, leverage would be reduced to the point where it would not be particularly advantageous.

The reason for setting the exercise price high when the life span of the issue is short is not so obvious. An analysis of the issues in this study indicates that newly formed companies, usually in a high risk industry such as mining or in a new industry such as mobile homes, have set the exercise price high in relation to the market price of the common. Generally the warrants were attached to common stock issued on a preemptive basis. The conclusion is that the managements of these new and rapidly expanding companies expected a high growth rate in earnings and stock prices. By setting the exercise price high and by attaching

Table 9. Comparison of the Initial Exercise Price of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 with the Price of the Related Common Stock on the Approximate Date of Issue of the Warrants, by Potential Life Span

| Exercise Price as a Percentage of the Stock Price | Number of Issues            |        |         |          |          |          |          |           | Total |
|---|-----------------------------|--------|---------|----------|----------|----------|----------|-----------|-------|
|   | Potential Life Span (Years) |        |         |          |          |          |          |           |       |
|   | Less than 4                 | 4 to 7 | 8 to 11 | 12 to 15 | 16 to 19 | 20 to 23 | 24 to 27 | Perpetual |       |
| Less than 75 percent                              |                             |        | 3       | 1        |          |          |          |           | 4     |
| 75 percent to 84 percent                          |                             | 1      | 2       |          |          | 1        |          |           | 4     |
| 85 percent to 94 percent                          |                             | 1      | 4       | 1        |          |          |          | 1         | 7     |
| 95 percent to 104 percent                         |                             | 10     | 10      | 1        |          | 1        | 2        |           | 24    |
| 105 percent to 114 percent                        | 1                           | 8      | 12      | 5        |          | 1        | 1        |           | 28    |
| 115 percent to 124 percent                        |                             | 7      | 3       | 1        |          | 1        |          | 1         | 13    |
| 125 percent to 134 percent                        | 1                           | 3      | 5       |          |          |          |          |           | 9     |
| 135 percent or more                               | 1                           | 6      | 8       |          |          |          |          | 2         | 17    |
| Total   | 3                           | 36     | 47      | 9        |          | 4        | 3        | 4         | 106   |
| Median  | 131%                        | 112%   | 108%    | 111%     |          | 105%     | 104%     | 141%      | 110%  |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

more warrants to each unit of capital sold, a larger amount of capital, needed for expansion purposes, could be raised when the warrants were exercised.<sup>39</sup>

One additional aspect of Table 9 requires comment. Warrants with life spans in the 20-23 and 24-27 year classifications have low exercise prices in relation to the underlying common stock prices--5 percent and 4 percent, respectively, above the common price on the date of issue. The expectation would be that warrants with long lives would have a high exercise price in relation to the common price for two reasons. First, a high exercise price would provide better leverage for a longer period of time if the common price advances over time as would be expected under normal circumstances. Second, ceteris paribus, the higher the exercise price, the lower the dilution of asset values, common stock prices, earnings per share, and the market price of the common stock if the warrants are exercised.

Table 9 is based on the initial exercise price and does not consider exercise price escalations. Of the seven issues included in these two classifications, the terms of three include one or more exercise price escalations. Two other issues are callable, an indication that management may force their exercise prior to their expiration dates.

Changes in exercise price. One of the means by which management can possibly induce the exercise of warrants prior to their expiration

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<sup>39</sup>This policy of setting the exercise price high does not always achieve its purpose. Two of the three companies issuing warrants with a life span of less than four years raised very little additional capital because the exercise price of the warrants was higher than the market price of the common in the period just prior to expiration of the warrants. The warrants of the third company have not expired.

is through an escalation of the exercise price. This is not a particularly effective device for timing the inflow of funds, however, because the escalated exercise prices and dates of escalation are stipulated in the original agreement. The factors which determine whether the warrants will be exercised in the period immediately prior to an exercise price escalation are, therefore, not directly under the control of management.

The conditions precedent to exercise are that the theoretical value of the warrant be positive and that the theoretical value of the warrant and its market price be approximately equal. A pending step-up in the exercise price has much the same effect as the approaching expiration date of a warrant issue. The premium tends to decline steadily, beginning about 12 to 15 months before the escalation is effective, so that the market price of the warrant tends to approach its theoretical value.<sup>40</sup> A warrant holder may be forced to exercise the warrant into common stock because the value of the warrant will decline when the new exercise price becomes effective.

Other factors in addition to the conditions precedent just discussed also influence the warrant holder. These include the amount of the increase in exercise price and the length of the period that the warrant is exercisable at the higher exercise price. The shorter this period is and the greater the exercise price increase, the greater the probability that the warrant holder will exercise.

The warrants and 5 percent subordinated debentures issued by

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<sup>40</sup>William Schwartz and Julius Spellman, Guide to Convertible Securities (New York: William Schwartz and Julius Spellman, 1968), p. 28.

Armour and Company in December, 1954 in exchange for its \$6 convertible preferred stock illustrate these points. The exercise price of the warrants was \$12.50 until December 31, 1956, \$15 thereafter until December 31, 1959, \$17.50 thereafter until December 31, 1961, and \$20 from then until December 31, 1964 when the warrants expired. During the 1956-1957 fiscal year when the exercise price increased by 20 percent, warrant-holders exercised approximately 36 percent of the 500,000 warrants originally issued. In addition to the current increase in exercise price, the warrant-holders were probably influenced by the fact that another sizeable increase in the exercise price would occur in three years.

Twenty-one of the 94 warrant series included in this study contained a provision for one or more escalations in the exercise price. The range in the number of increases was from one to six with a median of one. Most of the issues<sup>41</sup> having exercise price escalations were attached to debt instruments. Thirteen, or 59 percent, of the 22 issues having price escalations were attached to straight-debt securities issued to raise cash. Only one issue was attached to common stock issued for the purpose of raising cash.

The large number of issues having price escalations which were attached to straight debt, versus the small number attached to common stock, offers some insight into the setting of the initial exercise price. Table 7 on page 115 indicates that the median exercise price for warrants issued with straight debt was set 4 percent above the

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<sup>41</sup>The distinction between a series and an issue should be noted. There were 21 series comprising 22 issues with price escalations.

market price of the common on the date of issue, in contrast to a 16 percent median for warrants issued with common stock. Management appears to set the initial exercise price low when warrants are attached to debt in order to increase the value of the warrants in the warrant-debt package and thereby reduce the interest on the debt. Potential dilution in shares outstanding is reduced by this policy. At the same time, potential dilution in earnings per share is less because of the escalated exercise prices if the assumption is made that the warrants will not be exercised until the period immediately preceding their expiration.

A recent innovation in warrant agreements allows management some control over the timing of the exercise of warrants by reduction in the exercise price. The agreements stipulate the percentage of decrease in the exercise price and the minimum period of time that the reduction must remain in force. Reduction of the exercise price by a significant amount for a short period of time makes it advantageous for warrant-holders to exercise their warrants before the price returns to its previous level.<sup>42</sup> This feature would be particularly advantageous if the exercise price exceeded the market price of the common stock near the expiration date of the warrants. If management needed funds, it could reduce the exercise price below the market price, thus receiving funds through the exercise of the warrants and at the same time benefiting the warrant-holders.

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<sup>42</sup>The reduction must be temporary or the only effect would be an increase in the price of the warrant by approximately the amount of the reduction in the exercise price. See Richard A. Stevenson and Joe Lovely, "Why a Bond Warrant Issue?" Financial Executive, XXXVIII (June, 1970), 19.

Of the 94 series in this study, eight included a provision in the agreement for reduction of the exercise price. The amount of the reduction ranged from 25 percent to 33 1/3 percent. The first series to include this provision was Ling-Temco-Vought, Inc. (LTV Corp.).<sup>43</sup> The last issue to include this stipulation was by Gould, Inc. on July 31, 1969.

The reduction-of-exercise-price feature was not included in any of the series in this study issued after July, 1969. The reason was probably an announcement by the American Stock Exchange that it would no longer list warrants with this provision unless the issuer agreed to forgo the right to reduce the exercise price while the warrants were listed.<sup>44</sup> This action was taken by the American Stock Exchange in the interest of providing an orderly market in warrants. Reducing the exercise price causes conversion of the warrants into common and at the same time it stimulates a rush of buy orders for the warrants.

Means of payment. Most warrant agreements stipulate that the exercise price is payable in cash. However, in recent years warrants exercisable by either cash or debt at par value have become increasingly popular. Such warrants are similar to convertible debt in that they provide a means of converting debt into equity. The conditions precedent for conversion are that the warrants have a market value greater than

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<sup>43</sup>Four of the remaining seven series containing a reduction-of-exercise-price provision were issued by companies affiliated with Ling-Temco-Vought, Inc.

<sup>44</sup>"American Board Says It Will No Longer List Certain Stock Warrants," The Wall Street Journal, July 7, 1969, p. 26.



zero and that the related debt sell at a discount near the expiration date of the warrants. The effect of the debt option is to lower the effective exercise price when the debt is selling at a discount. This feature does not offer management much control over cash inflows or debt-equity ratios, however, because the terms for the warrant-debt issue must be stipulated prior to the original issue date.

Whether the warrants will be exercised by a cash payment or by presentation of debt at par, or not exercised at all, will depend on the market forces in effect when the expiration date of the warrants approaches. Some control over the method of exercise can be established through the setting of the exercise price of the warrants and the setting of the nominal interest rate and the maturity date of the debt. The exercise price should be set low enough so that the warrants will have a market value greater than zero near their expiration date. The nominal rate of interest on the debt should be set lower than the prevailing interest rate so that the debt will initially sell at a discount. The maturity date of the debt should be set later than the expiration date of the warrants to increase the possibility of the debt selling at a discount prior to the expiration date of the warrants. As the maturity date of debt approaches, the discount tends to disappear.

Twenty-one of the 94 warrant series in this study were issued with the exercise price payable in cash or debt securities. Fourteen of these series were attached to debt issues for the purpose of facilitating their sale. Most of the remaining series were offered as part of a package of securities in mergers and acquisitions.

### Period of Exercise

A basic factor influencing the exercise of warrants is the expiration date of the issue. The life span of the warrants included in this study and provision for reduction of that span are analyzed in this section.

Warrant life. As Table 10 shows, the life span of 78 percent of the warrant issues included in this study varied between 4 and 11 years. The median life span was 10 years. Table 10 does provide some evidence of a trend toward a shorter warrant life. The median life of five years for the 1969-1971 period is lower than the median in any other period. The shorter life span during this period can be attributed primarily to real estate investment trusts. Of the 44 issues during this period, 16 were by real estate investment trusts with a median life of five years. However, even with the exclusion of real estate investment trusts, the trend toward a shorter life span is evident. The median life span of the remaining 28 issues during this period is approximately 7 1/2 years.

A definite trend away from perpetual warrants is shown in Table 10. The last such issue was by the Alleghany Corporation in 1952. The other three issues originated in the late 1920's and in 1936 as the result of mergers. One of these issues, that of the United Corporation, was cancelled by court order in 1955 as the result of a reorganization. Apparently corporations no longer find desirable a capital structure which includes a call on their common stock for an indefinite period. Theoretically, perpetual warrants which have no special features such as escalations in the exercise price would never be exercised. From the

Table 10. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Potential Life Span and by Date of Issue

| Potential Life Span (Years) | Number of Issues |           |           |           |           |       |                  |
|-----------------------------|------------------|-----------|-----------|-----------|-----------|-------|------------------|
|                             | Date of Issue    |           |           |           |           | Total | Percent of Total |
|                             | Prior to 1950    | 1950-1959 | 1960-1966 | 1967-1968 | 1969-1971 |       |                  |
| Less than 4                 |                  | 1         | 1         |           | 1         | 3     | 3                |
| 4 to 7                      |                  | 2         | 2         | 3         | 29        | 36    | 34               |
| 8 to 11                     | 2                | 10        | 4         | 20        | 11        | 47    | 44               |
| 12 to 15                    |                  | 1         | 5         | 2         | 1         | 9     | 8                |
| 16 to 19                    |                  |           |           |           |           |       |                  |
| 20 to 23                    |                  |           | 1         | 2         | 1         | 4     | 4                |
| 24 to 27                    |                  | 1         | 1         |           | 1         | 3     | 3                |
| Perpetual                   | 3                | 1         |           |           |           | 4     | 4                |
| Total                       | 5                | 16        | 14        | 27        | 44        | 106   | 100              |
| Median (Years)              | Perpetual        | 10        | 11        | 10        | 5         | 10    |                  |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

point of view of investors, these warrants are desirable as long as the relationship between the exercise price and the underlying common stock price is such that leverage is favorable.

Warrants which were issued as part of a unit for cash tended to have a shorter life than those issued for any other reason. As indicated in Table 11, they had a median life of 5 1/2 years as compared to a median life of 10 years for all the issues included in this study. Further analysis of these 59 issues in Table 12 discloses that this shorter life span is associated with those issues which were attached to common stock. Included in this group of 24 issues are 14 issues by real estate investment trusts. The median life span of these issues is five years. Table 13 shows that warrants attached to common stock and issued as a unit in exchange for the securities of another corporation also have a median life shorter than any other warrant-security unit issued for this purpose. Only warrants issued without any other securities attached have a shorter median life.

Provisions for reduction of life. A few warrant agreements in recent years have included a provision for redemption of the issue at the option of the issuer. Four of the 94 warrant series under study included this feature. This option provides management with a means of forcing exercise when the theoretical value of the warrant is positive and in excess of the call price. If the theoretical value of the warrants is less than the call price, warrant holders will present the warrants for redemption if a call is issued.

While callable warrants offer management better financial planning and control of cash flows, they offer no comparable advantages to

Table 11. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Potential Life Span and by Use

| Potential Life Span (Years) | Number of Issues           |  |   |               |       |       |
|-----------------------------|----------------------------|--|---|---------------|-------|-------|
|                             | Use                        |  |   |               |       | Total |
|                             | As Part of a Unit for Cash | As Part of the Consideration for the Securities of Another Corporation | As Part of a Recapitalization or Reorganization | As a Dividend | Other |       |
| Less than 4                 | 3                          |  |   |               |       | 3     |
| 4 to 7                      | 28                         | 6  | 2   |               |       | 36    |
| 8 to 11                     | 20                         | 17   | 4   | 3             | 3     | 47    |
| 12 to 15                    | 3                          | 4  | 1   | 1             |       | 9     |
| 16 to 19                    |                            |  |   |               |       |       |
| 20 to 23                    | 3                          | 1  |   |               |       | 4     |
| 24 to 27                    | 2                          | 1  |   |               |       | 3     |
| Perpetual                   |                            | 3  | 1   |               |       | 4     |
| Total                       | 59                         | 32   | 8   | 4             | 3     | 106   |
| Median (Years)              | 5 1/2                      | 10   | 10  | 10            | 9 1/2 | 10    |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

Table 12. Classification of Warrants Issued with Securities to Raise Cash by Potential Life Span and by Type of Security; Fifty-Nine Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Potential Life Span<br>of Warrants (Years) | Number of Issues |                          |                 |       |       |                        |
|--|------------------|--------------------------|-----------------|-------|-------|------------------------|
|  | Type of Security |                          |                 |       | Total | Percent<br>of<br>Total |
|  | Straight<br>Debt | Conver-<br>tible<br>Debt | Common<br>Stock | Other |       |                        |
| Less than 4                                |                  | 1                        | 2               |       | 3     | 5                      |
| 4 to 7                                     | 5                | 2                        | 20              | 1     | 28    | 48                     |
| 8 to 11                                    | 18               |                          | 2               |       | 20    | 34                     |
| 12 to 15                                   | 2                |                          |                 | 1     | 3     | 5                      |
| 16 to 19                                   |                  |                          |                 |       |       |                        |
| 20 to 23                                   | 3                |                          |                 |       | 3     | 5                      |
| 24 to 27                                   | 2                |                          |                 |       | 2     | 3                      |
| Perpetual                                  |                  |                          |                 |       |       |                        |
| Total                                      | 30               | 3                        | 24              | 2     | 59    | 100                    |
| Median (Years)                             | 10               | 5                        | 5               | 10    | 5 1/2 |                        |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

Table 13. Classification of Warrants Issued with Securities as Part of the Consideration for the Securities of Another Corporation by Potential Life Span and by Number and Types of Securities; Thirty-Two Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Potential Life Span<br>of Warrants (Years) | Number of Issues               |                  |                 |       |   |                                     |       |    | Total | Percent<br>of<br>Total |
|--|--------------------------------|------------------|-----------------|-------|---|-------------------------------------|-------|----|-------|------------------------|
|  | Number and Types of Securities |                  |                 |       |   |                                     |       |    |       |                        |
|  | No other<br>Security           | One Type         |                 |       | Two Types                                     |                                     |       |    |       |                        |
|  |                                | Straight<br>Debt | Common<br>Stock | Other | Convertible<br>Debt<br>and<br>Common<br>Stock | Preferred<br>and<br>Common<br>Stock | Other |    |       |                        |
| Less than 4                                | 2                              |                  | 3               | 1     | 3   |                                     | 2     | 6  | 19    |                        |
| 4 to 7                                     |                                | 5                | 3               | 4     |   |                                     |       | 17 | 53    |                        |
| 8 to 11                                    |                                | 3                |                 | 1     |   |                                     |       | 4  | 13    |                        |
| 12 to 15                                   |                                |                  |                 |       |   |                                     |       |    |       |                        |
| 16 to 19                                   |                                | 1                |                 |       |   |                                     |       | 1  | 3     |                        |
| 20 to 23                                   |                                |                  |                 |       |   |                                     |       | 1  | 3     |                        |
| 24 to 27                                   |                                |                  |                 |       |   |                                     | 3     | 1  | 3     |                        |
| Perpetual                                  |                                |                  |                 |       |   |                                     |       | 3  | 9     |                        |
| Total                                      | 2                              | 9                | 6               | 6     | 3   | 3                                   | 3     | 32 | 100   |                        |
| Median (Years)                             | 7                              | 10               | 8½              | 10    | 11½   | Perpetual                           | 10    | 10 |       |                        |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

investors. The redemption feature of callable warrants severely limits their premium value, especially when the theoretical value exceeds the call price. No investor would be willing to pay more than the theoretical value of a warrant if that warrant is being called at a lower price.

The premium is also likely to be less when the warrant has no theoretical value and the call price is low. The plight of investors in Keys Fibre warrants indicates the reason. These warrants, issued in 1960, had a stated life of 10 years and were callable at any time at \$1 each. When the company issued a redemption call in 1967, the warrants were trading at approximately \$4. Since the warrants had no theoretical value, their price immediately dropped to the call price of \$1.<sup>45</sup> The call feature, although advantageous to management, is not likely to be accepted by investors because of the hazards it presents.

#### Anti-dilution Provisions

Most warrant agreements contain an anti-dilution provision. This feature is designed to protect warrant holders from a decline in the value of their warrants which would result from stock splits and stock dividends and from the issuance of additional common stock at a price below the current market price of the common stock or the exercise price of the warrant. The usual procedure is to increase the number of shares a warrant will purchase by the percentage increase in common shares outstanding. The exercise price is reduced proportionally, so that it reflects the approximate decline in market price of the common shares

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<sup>45</sup>Schwartz and Spellman, op. cit., p. 24.



resulting from the issuance of additional shares at a price below the current market price. The net result is that a warrant holder can purchase the same proportion of outstanding shares at the same total cash as that prevailing before the issuance of additional shares.

Sperry Rand Corporation warrants illustrate this point. Warrants to purchase 2,200,000 common shares at \$25 per share to September 16, 1963 and at \$28 per share thereafter until September 15, 1967 were attached to Sperry Rand's 5 1/2 percent debentures dated September 1, 1957. After stock dividends of 2 percent in March of 1961, 2 percent in September, 1961 and 4 percent in 1962, the original 2,200,000 common shares reserved for warrants had increased to 2,376,000 shares. Each warrant carried the right to purchase 1.08 shares for \$25. The exercise price per share, therefore, had been reduced to \$23.15 as a result of the stock dividends. Most of the warrants were exercised in 1967 at an exercise price of \$28 per 1.08 shares, or \$25.93 per share.

Armour and Company warrants provide an exception to the general rule that warrant holders are usually protected against dilution. Its 10-year warrants, issued in 1954 under a recapitalization plan, were not protected against dilution from stock dividends. During this period, Armour declared two 10 percent stock dividends. Warrant holders who held their warrants for most of the 10-year period before exercising them therefore received approximately 17 percent fewer shares than those warrant holders who exercised their warrants prior to the first stock dividend and held the shares for an equivalent period. In addition, the exercise price per share was 21 percent higher than it would have been had the warrant agreement included an anti-dilution provision for stock dividends.

In summary, management has exercised a considerable amount of flexibility in setting the contractual terms of the warrants it issues. This flexibility is achieved through the setting of the exercise price, provision for changes in the exercise price and the means of payment of the exercise price, and through establishment of the warrant life and provisions for the reduction of the warrant life. There is, however, a practical limit to this flexibility because the warrant terms must be acceptable to investors. In addition, this flexibility may not result in significant benefits to management in its financial planning function because the terms of the warrant agreement are stipulated at issue date and such terms may not achieve the desired results 10 or 15 years in the future.

In setting the exercise price of warrants, management appears to favor future stockholders to the detriment of its current stockholders. This is evident when the ratio of the exercise price to the common stock price at date of issue is examined. On the average, this ratio is lower for warrants issued to potential stockholders. For example, the median exercise price is only 4 percent above the market price of the common when warrants are attached to straight debt for the purpose of raising cash. If the warrant is attached to common stock for the purpose of raising cash, the median exercise price is 16 percent above the common stock price.

Since common stock is often issued on a preemptive basis to current stockholders and debt is not, current stockholders assume the risk of greater potential dilution of asset values and earnings per share when warrants are attached to debt rather than common stock if the assumption

is made that the total value of both security packages is equal and the number of warrants issued is the same for each package. The risk of greater potential dilution is further compounded by virtue of the fact that the warrants with the lower exercise price are more likely to be exercised.

Two factors, to some extent, offset the risk of greater dilution to current stockholders from the issuance of warrant-debt securities. Current stockholders benefit from the lower interest rate which the warrant-debt security offers. In addition, 13 of the 30 warrant issues attached to straight debt have one or more exercise price escalations prior to their expiration date. If these warrants are held to expiration, dilution in asset values and earnings per share will be reduced because of the higher exercise prices.

The ratio of the exercise price to the price of the common stock is also lower when warrants are issued as part of the consideration for securities of another corporation. The median exercise price is 13 percent above the common price when warrants are issued for this purpose. In contrast, the median exercise price is 19 percent above the price of the common stock when warrants are issued to current stockholders as dividend distributions and 35 percent when warrants are issued to current shareholders as part of a reorganization or recapitalization.

The assumption is that the exercise price is set low for warrants issued in mergers in order to increase the total value of the security package offered the security holders of the acquired corporation. In addition, warrants may be included in the package in order to provide a potential equity interest to certain security holders of the acquired

corporation. The result is greater potential dilution to current stockholders in either case, assuming the same number of warrants could have been issued at a higher exercise price.

Management must consider the life span of warrants in setting exercise prices if dilution is to be minimized. Ceteris paribus, the longer the life span, the higher should be the exercise price. The managements of companies included in this study have not always followed this practice. There is, however, a tendency to incorporate exercise price escalations into long-term warrant agreements. In addition, a few warrant issues contain a call feature which can be used to force the exercise of warrants at an appropriate time.

From the point of view of the investor, a call feature is undesirable because it limits the premium, and hence the leverage, of the warrant. A desirable feature for the investor is protection against dilution of the common equity of the issuing corporation. Because of these investor considerations, the anti-dilution feature is included in most agreements, but the call feature is rarely incorporated into the agreement.

The conclusion is that management must assume the responsibility for warrant issues because it sets the terms of the warrant agreement. Warrants are a risky means of facilitating the sale of other securities which are issued to achieve the goals of the corporation that are established by management. Financial statements reflect the benefits of this risk through lower cash outflows for interest and/or dividends. Management should also be accountable to current stockholders for the cost of these benefits which includes potential dilution of control, asset values,

earnings per share, and of the market price of the common stock. This accountability must be considered in formulating guidelines for earnings-per-share computations.

#### EXERCISE OF WARRANTS

The conditions precedent necessary to induce warrantholders to exercise their warrants are that the theoretical value of the warrants be positive and that the market price of the warrants be close to their theoretical value. Since these conditions are not always met, potential dilution of outstanding shares is usually greater than the actual dilution. An analysis of the potential and actual dilution and the timing of exercise of the warrants included in this study follows.

##### Potential Dilution

Potential dilution, for purposes of this study, is defined as the ratio of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option. This ratio is, in effect, the dilution in control that current stockholders will experience if all warrants are exercised and no additional shares of common stock are issued during the period prior to exercise.

As shown by Table 14, the median potential dilution of the 94 warrant series under study was 20.0 percent. The potential dilution in shares outstanding increased substantially in the 1969-1971 period. Except for the period prior to 1950, the median potential dilution of

Table 14. Classification of 94 Warrant Series Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Potential Dilution of Shares Outstanding<sup>a</sup> and by Date of the First Issue in the Series

| Potential Dilution<br>of Shares Outstand-<br>ing (Percent) | Number of Series Issued       |               |               |               |               |       |                        |
|--|-------------------------------|---------------|---------------|---------------|---------------|-------|------------------------|
|  | Date of First Issue in Series |               |               |               |               | Total | Percent<br>of<br>Total |
|  | Prior to<br>1950              | 1950-<br>1959 | 1960-<br>1966 | 1967-<br>1968 | 1969-<br>1971 |       |                        |
| Less than 5.0  |                               | 2             | 1             |               | 4             | 7     | 7                      |
| 5.0 to 9.9   |                               | 4             | 1             | 2             | 3             | 10    | 11                     |
| 10.0 to 14.9   |                               | 6             | 2             | 4             | 3             | 15    | 16                     |
| 15.0 to 19.9   |                               | 2             | 3             | 6             | 4             | 15    | 16                     |
| 20.0 to 24.9   | 1                             | 1             | 1             | 2             | 2             | 7     | 7                      |
| 25.0 to 29.9   | 1                             |               | 2             | 1             | 4             | 8     | 9                      |
| 30.0 to 34.9   | 2                             | 1             | 1             | 2             | 5             | 11    | 12                     |
| 35.0 to 39.9   |                               |               | 1             | 1             | 2             | 4     | 4                      |
| 40.0 to 44.9   | 1                             |               | 1             |               |               | 2     | 2                      |
| 45.0 to 49.9   |                               |               |               | 1             | 6             | 7     | 7                      |
| 50.0 and over  |                               |               |               | 2             | 6             | 8     | 9                      |
| Total  | 5                             | 16            | 13            | 21            | 39            | 94    | 100                    |
| Median   | 33.3%                         | 12.1%         | 19.8%         | 19.4%         | 30.0%         | 20.0% |                        |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage, of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.

30.0 percent for the 1969-1971 period is the highest of any period. This increase in potential dilution was caused by the 15 warrant series issued by real estate investment trusts. Warrants issued by these real estate investment trusts had a median potential dilution of 49.9 percent with a range from 22.0 percent to 50.0 percent. In contrast, the remaining 24 series in the 1969-1971 period had a median potential dilution of only 17.7 percent. Table 15 presents the same information as Table 14, except that the analysis is by warrant issue rather than warrant series. The median potential dilution on this basis is 18.8 percent.

Analysis of the 106 warrant issues by use (Table 16) reveals no material differences in the median potential dilution except that warrants issued as dividends have less potential dilution than any other use. When the 59 warrant issues attached to other securities for the purpose of raising cash are analyzed by type of security, however, the median potential dilution of those warrant issues attached to common stock is significantly greater. As indicated by Table 17, the median potential dilution of warrants issued with common stock is 33.3 percent. This compares with a median of 12.8 percent when the warrants are attached to straight debt. Perhaps management is less concerned about potential dilution of the stockholder's equity under such circumstances because many common stock issues are on a preemptive basis.

Fourteen of the 24 warrant issues shown in Table 17 as being attached to common stock were by real estate investment trusts. The median potential dilution of shares outstanding for these 14 issues was 49.9 percent, as compared with 11.2 percent for the remaining 10 issues. Most of the warrants issued by these real estate investment trusts were

Table 15. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Potential Dilution of Shares Outstanding<sup>a</sup> and by Date of Issue

| Potention Dilution<br>of Shares Outstand-<br>ing (Percent) | Number of Issues |               |               |               |               |       |                        |
|--|------------------|---------------|---------------|---------------|---------------|-------|------------------------|
|  | Date of Issue    |               |               |               |               | Total | Percent<br>of<br>Total |
|  | Prior to<br>1950 | 1950-<br>1959 | 1960-<br>1966 | 1967-<br>1968 | 1969-<br>1971 |       |                        |
| Less than 5.0  |                  | 2             | 1             | 3             | 4             | 10    | 9                      |
| 5.0 to 9.9   |                  | 4             | 1             | 4             | 7             | 16    | 15                     |
| 10.0 to 14.9   |                  | 6             | 2             | 4             | 5             | 17    | 16                     |
| 15.0 to 19.9   |                  | 2             | 4             | 7             | 3             | 16    | 15                     |
| 20.0 to 24.9   | 1                | 1             | 2             | 2             | 3             | 9     | 8                      |
| 25.0 to 29.9   | 1                |               | 2             | 1             | 4             | 8     | 8                      |
| 30.0 to 34.9   | 2                | 1             |               | 2             | 5             | 10    | 9                      |
| 35.0 to 39.9   |                  |               | 1             |               | 1             | 2     | 2                      |
| 40.0 to 44.0   | 1                |               | 1             |               |               | 2     | 2                      |
| 45.0 to 49.9   |                  |               |               | 2             | 6             | 8     | 8                      |
| 50.0 and over  |                  |               |               | 2             | 6             | 8     | 8                      |
| Total  | 5                | 16            | 14            | 27            | 44            | 106   | 100                    |
| Median   | 33.0%            | 10.8%         | 19.4%         | 16.4%         | 23.7%         | 18.8% |                        |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage, of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.



Table 16. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Potential Dilution of Shares Outstanding<sup>a</sup> and by Use

| Potential Dilution of<br>Shares Outstanding<br>(Percent) | Number of Issues                       |   |  |                       |       |       |
|--|--|---|--|-----------------------|-------|-------|
|  | Use                                    |   |  |                       |       | Total |
|  | As Part<br>of a<br>Unit<br>for<br>Cash | As Part<br>of the<br>Consid-<br>eration<br>for the<br>Securi-<br>ties of<br>Another<br>Corpo-<br>ration | As Part<br>of a<br>Recapi-<br>taliza-<br>tion or<br>Reor-<br>ganiza-<br>tion | As a<br>Divi-<br>dend | Other |       |
| Less than 5.0  | 7                                      | 2   |  |                       | 1     | 10    |
| 5.0 to 9.9   | 7                                      | 6   | 2  | 1                     |       | 16    |
| 10.0 to 14.9   | 13                                     | 2   | 1  | 1                     |       | 17    |
| 15.0 to 19.9   | 8                                      | 6   | 1  | 1                     |       | 16    |
| 20.0 to 24.9   | 5                                      | 3   | 1  |                       |       | 9     |
| 25.0 to 29.9   | 3                                      | 3   | 1  |                       | 1     | 8     |
| 30.0 to 34.9   | 5                                      | 3   | 1  | 1                     |       | 10    |
| 35.0 to 39.9   |  | 1   | 1  |                       |       | 2     |
| 40.0 to 44.9   | 1                                      | 1   |  |                       |       | 2     |
| 45.0 to 49.9   | 6                                      | 2   |  |                       |       | 8     |
| 50.0 and over  | 4                                      | 3   |  |                       | 1     | 8     |
| Total  | 59                                     | 32  | 8  | 4                     | 3     | 106   |
| Median   | 17.7%                                  | 20.2%   | 19.2%  | 13.4%                 | 26.1% | 18.8% |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage, of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.

Table 17. Classification of Warrants Issued with Securities to Raise Cash by Potential Dilution of Shares Outstanding<sup>a</sup> and by Type of Security; Fifty-Nine Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Potential Dilution of<br>Shares Outstanding<br>(Percent) | Number of Issues |                          |                 |       |       |
|--|------------------|--------------------------|-----------------|-------|-------|
|  | Type of Security |                          |                 |       | Total |
|  | Straight<br>Debt | Conver-<br>tible<br>Debt | Common<br>Stock | Other |       |
| Less than 5.0  | 4                | 1                        | 2               |       | 7     |
| 5.0 to 9.9   | 6                |                          | 1               |       | 7     |
| 10.0 to 14.9   | 8                | 1                        | 4               |       | 13    |
| 15.0 to 19.9   | 5                |                          | 2               | 1     | 8     |
| 20.0 to 24.9   | 3                | 1                        |                 | 1     | 5     |
| 25.0 to 29.9   | 2                |                          | 1               |       | 3     |
| 30.0 to 34.9   | 1                |                          | 4               |       | 5     |
| 35.0 to 39.9   |                  |                          |                 |       |       |
| 40.0 to 44.9   | 1                |                          |                 |       | 1     |
| 45.0 to 49.9   |                  |                          | 6               |       | 6     |
| 50.0 and over  |                  |                          | 4               |       | 4     |
| Total  | 30               | 3                        | 24              | 2     | 59    |
| Median   | 12.8%            | 11.8%                    | 33.3%           | 18.5% | 17.7% |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage, of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.

attached to the original public offering of their shares of beneficial interest. The effect, therefore, is the same as if the shares had been issued on a preemptive basis. Each shareholder has the opportunity to retain his pro rata interest in equity by exercising his warrants.

Table 18 analyzes the potential dilution of warrants attached to securities issued in acquisitions and mergers by the type of security with which the warrant was combined. The conclusion is that the number of warrants issued, and therefore the potential dilution, is simply one of many factors entering into the terms of the agreement. When the warrants are attached to common stock, however, the median potential dilution of 16.6 percent is lower than the median of 20.2 percent for the group. Apparently managements of the acquiring firms are concerned about the potential dilution of warrants in such cases because the security holders of the acquired firms are receiving equity securities from the outset.

Potential dilution is less in those issues in which the exercise price is set near or slightly above the market price of the common on date of issue. In general, as the exercise price is set higher in relation to the common price, the potential dilution increases. As indicated by Table 19, the median potential dilution was 15.2 percent when the exercise price was from 105 to 114 percent of the common price. When the exercise price was in the range from 115 to 124 percent of the common price, the median potential dilution increased to 30.5 percent. This result is not unexpected because as the exercise price is increased in relation to the common price, the less the warrant contributes to the value of the total package of securities being offered. Consequently,

Table 18. Classification of Warrants Issued with Securities as Part of the Consideration for the Securities of Another Corporation by Potential Dilution of Shares Outstanding<sup>a</sup> and by Number and Types of Securities; Thirty-Two Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971

| Potential Dilution of<br>Shares Outstanding<br>(Percent) | Number of Issues               |                  |                 |       |   |                                     |       |       |
|--|--------------------------------|------------------|-----------------|-------|---|-------------------------------------|-------|-------|
|  | Number and Types of Securities |                  |                 |       |   |                                     |       | Total |
|  | No other<br>Security           | One Type         |                 |       | Two Types                                     |                                     |       |       |
|  |                                | Straight<br>Debt | Common<br>Stock | Other | Convertible<br>Debt<br>and<br>Common<br>Stock | Preferred<br>and<br>Common<br>Stock | Other |       |
| Less than 5.0  | 1                              |                  |                 | 1     |   |                                     |       | 2     |
| 5.0 to 9.9   | 1                              | 1                | 1               | 3     | 1   |                                     |       | 7     |
| 10.0 to 14.9   |                                |                  | 2               |       |   |                                     |       | 2     |
| 15.0 to 19.9   |                                | 2                | 1               | 1     |   |                                     | 2     | 6     |
| 20.0 to 24.9   |                                | 2                |                 |       | 1   |                                     |       | 3     |
| 25.0 to 29.9   |                                | 1                | 2               |       |   |                                     |       | 3     |
| 30.0 to 34.9   |                                | 1                |                 |       |   | 2                                   |       | 3     |
| 35.0 to 39.9   |                                | 1                |                 |       |   |                                     |       | 1     |
| 40.0 to 44.9   |                                |                  |                 |       |   | 1                                   |       | 1     |
| 45.0 to 49.9   |                                | 1                |                 |       |   |                                     |       | 1     |
| 50.0 and over  |                                |                  |                 | 1     | 1   |                                     | 1     | 3     |
| Total  | 2                              | 9                | 6               | 6     | 3   | 3                                   | 3     | 32    |
| Median   | 4.4%                           | 22.0%            | 16.6%           | 9.6%  | 22.0%   | 33.3%                               | 17.0% | 20.2% |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.

Table 19. Classification of 106 Warrant Issues Listed on the American Stock Exchange at Any Time between January 1, 1950 and December 31, 1971 by Potential Dilution of Shares Outstanding<sup>a</sup> and by Initial Exercise Price Expressed as a Percentage of the Price of the Related Common Stock on the Approximate Date of Issue

| Potential Dilution of Shares Outstanding (Percent) | Number of Issues                                  |         |         |          |           |           |            |               | Total |
|--|---|---------|---------|----------|-----------|-----------|------------|---------------|-------|
|  | Exercise Price as a Percentage of the Stock Price |         |         |          |           |           |            |               |       |
|  | Less than 75%                                     | 75%-84% | 85%-94% | 95% 104% | 105%-114% | 115%-124% | 125% -134% | 135% and over |       |
| Less than 5.0                                      |   |         | 2       | 2        | 3         | 1         | 1          | 1             | 10    |
| 5.0 to 9.9   |   |         | 1       | 3        | 7         |           | 1          | 4             | 16    |
| 10.0 to 14.9                                       | 1   | 1       |         | 7        | 4         | 1         | 1          | 2             | 17    |
| 15.0 to 19.9                                       | 1   | 1       | 1       | 4        | 4         | 2         | 1          | 2             | 16    |
| 20.0 to 24.9                                       | 1   | 1       |         | 1        | 3         |           | 1          | 2             | 9     |
| 25.0 to 29.9                                       |   | 1       |         | 1        | 1         | 2         |            | 3             | 8     |
| 30.0 to 34.9                                       | 1   |         |         | 3        | 1         | 2         | 1          | 2             | 10    |
| 35.0 to 39.9                                       |   |         |         | 1        |           |           |            | 1             | 2     |
| 40.0 to 44.9                                       |   |         | 1       |          |           |           | 1          |               | 2     |
| 45.0 to 49.9                                       |   |         | 1       | 1        | 2         | 2         | 2          |               | 8     |
| 50.0 and over                                      |   |         | 1       | 1        | 3         | 3         |            |               | 8     |
| Total  | 4   | 4       | 7       | 24       | 28        | 13        | 9          | 17            | 106   |
| Median   | 21.9%   | 20.7%   | 16.3%   | 15.4%    | 15.2%     | 30.5%     | 22.6%      | 19.1%         | 18.8% |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage, of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.

in a given transaction, more warrants will have to be issued than would be the case if the exercise price were set lower.

APB Opinion No. 15 becomes somewhat paradoxical when it is considered in the light of the facts discussed in the preceding paragraph. Under the treasury stock method, warrants are not dilutive until the market price of the common stock exceeds the exercise price. Yet, the higher the exercise price in relation to the market price of the common, the higher potential dilution is likely to be. On the other hand, the possibility exists that actual dilution might be less when the exercise price is set high in relation to the common stock price. Actual dilution might be less because the likelihood of the market price of the common exceeding the exercise price of the warrant is less, ceteris paribus, when the exercise price is set high in relation to the common price.

#### Actual Dilution

Actual dilution, as used in this study, is the ratio of the number of common shares issued through the exercise of warrants to the number of common shares outstanding at the end of the period in which the warrant issue expires. Actual dilution will seldom be as great as the potential dilution as defined in this study. This is true even if all of the warrants are exercised because during the period in which the warrants are outstanding most companies will have issued additional shares of common. The warrant holder may not be protected against the dilution caused by the issuance of these additional shares either because the warrant agreement excludes certain types of common stock issues or because the right to purchase common existed prior to the warrant

agreement. Examples of the former are warrant agreements which exclude from their anti-dilution provisions small stock dividends of less than 1 or 2 percent and those which exclude shares issued under employee stock option plans. An example of the latter might be shares issued through the conversion of convertible securities outstanding prior to the warrant agreement.

Actual dilution will also be less than potential dilution because less than 100 percent of the warrants will be exercised in most cases. Even in successful issues where the market price of the common exceeds the exercise price of the warrants in the period immediately preceding the expiration date of the warrants, some warrants are not exercised. For example, there were warrants to purchase 2,376,000 shares of Sperry Rand Corporation stock outstanding in the period preceding their expiration on September 15, 1967. During this period the market price of Sperry Rand common exceeded the exercise price of the warrants. Yet warrants to purchase approximately 48,000 shares were not exercised.

There were 20 warrant issues listed on the American Stock Exchange which expired between January 1, 1950 and December 31, 1971. Table 20 compares the potential dilution of the common equity of these companies with the actual dilution which was experienced. There were five issues, or 25 percent of the total issues under analysis, which had a potential dilution greater than 15 percent. Yet no issue resulted in an actual dilution as high as 15 percent. In fact, three of these issues resulted in dilution of less than 3 percent.

One of the arguments of those opposed to reflecting warrants in earnings-per-share computations is that many warrants are not exercised

Table 20. Comparison of Potential Dilution of Shares Outstanding<sup>a</sup> with Actual Dilution of Shares Outstanding;<sup>b</sup> Twenty Warrant Issues Listed on the American Stock Exchange which Expired between January 1, 1950 and December 31, 1971

| Potential Dilution <sup>c</sup><br>(Percent) | Number of Issues                       |         |         |          |           |       |                  |
|--|--|---------|---------|----------|-----------|-------|------------------|
|  | Actual Dilution <sup>d</sup> (Percent) |         |         |          |           | Total | Percent of Total |
|  | Less than 3.0                          | 3.0-5.9 | 6.0-8.9 | 9.0-11.9 | 12.0-14.9 |       |                  |
| Less than 3.0                                | 2                                      |         |         |          |           | 2     | 10.0             |
| 3.0 to 5.9                                   | 3                                      |         |         |          |           | 3     | 15.0             |
| 6.0 to 8.9                                   | 2                                      |         | 1       |          |           | 3     | 15.0             |
| 9.0 to 11.9                                  | 2                                      |         | 2       | 1        |           | 5     | 25.0             |
| 12.0 to 14.9                                 |  | 1       |         |          | 1         | 2     | 10.0             |
| 15.0 to 17.9                                 |  |         |         |          |           |       |                  |
| 18.0 to 20.9                                 | 1                                      |         | 1       |          |           | 2     | 10.0             |
| 21.0 to 23.9                                 | 1                                      |         |         |          |           | 1     | 5.0              |
| 24.0 to 26.9                                 |  |         |         |          |           |       |                  |
| 27.0 to 30.0                                 | 1                                      |         |         |          | 1         | 2     | 10.0             |
| Total  | 12                                     | 1       | 4       | 1        | 2         | 20    | 100.0            |
| Percent of total                             | 60.0                                   | 5.0     | 20.0    | 5.0      | 10.0      | 100.0 |                  |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

<sup>a</sup>The ratio, expressed as a percentage, of the number of common shares under option by virtue of a warrant issue or series to the sum of: (1) the number of common shares outstanding at the end of the period during which the warrants were issued and (2) the number of common shares under option.

<sup>b</sup>The ratio, expressed as a percentage, of the number of common shares issued through the exercise of warrants to the number of common shares outstanding at the end of the period in which the warrant issue expired.

<sup>c</sup>Median, potential dilution: 10.4%.

<sup>d</sup>Median, actual dilution: 2.1%.



and, hence, do not cause dilution. Without prejudging the merits of the argument, it is clear that many warrants are in fact not exercised and this fact must be considered in formulating guidelines for earnings-per-share computations of companies with warrants in their capital structure. For the 20 warrants included in this study, the median of the potential dilution was 10.4 percent, a figure significantly greater than the median of the actual dilution encountered, 2.1 percent. The principal reason for this difference is reflected in Table 21, which shows that the median of the percentage of warrants exercised was 59 percent.

Table 21 also provides data on the exercise experience of warrant issues in which the exercise price was set high in relation to the market price of the common stock on the approximate date of issue. There were eight issues in which the exercise price was 125 percent or more of the market price of the common on the approximate date of issue. The median percentage of exercise of these issues was 8 percent as compared with 59 percent for the group. For the population under study, the conclusion is that, in general, the higher the ratio of the exercise price of the warrant to the price of the underlying common stock on the approximate date of issue, the lower is the likelihood of exercise.

#### Timing of Exercise

The basic factor influencing the time of the exercise of the warrants in this study was the expiration date of the warrants. The median percentage of exercise of the 20 warrants in this study was approximately 59 percent. However, as indicated by Table 22, the median percentage of exercise in the period immediately preceding the period of expiration of

Table 21. Classification of Twenty Warrant Issues Listed on the American Stock Exchange which Expired between January 1, 1950 and December 31, 1971 by Percentage Exercised and by Initial Exercise Price Expressed as a Percentage of the Price of the Related Common Stock on the Approximate Date of Issue

| Percentage Exercised      | Number of Issues                                  |         |         |          |           |           |           |               | Total |
|---------------------------|---|---------|---------|----------|-----------|-----------|-----------|---------------|-------|
|                           | Exercise Price as a Percentage of the Stock Price |         |         |          |           |           |           |               |       |
|                           | Less than 75%                                     | 75%-84% | 85%-94% | 95%-104% | 105%-114% | 115%-124% | 125%-134% | 135% and over |       |
| Less than 10 percent      |   |         |         |          | 2         | 1         | 2         | 2             | 7     |
| 10 percent to 19 percent  |   |         |         |          | 1         |           |           | 1             | 2     |
| 20 percent to 29 percent  |   |         |         |          |           |           |           |               |       |
| 30 percent to 39 percent  |   |         |         |          |           |           |           | 1             | 1     |
| 40 percent to 49 percent  |   |         |         |          |           |           |           |               |       |
| 50 percent to 59 percent  |   |         |         |          |           |           |           |               |       |
| 60 percent to 69 percent  |   |         |         |          |           |           |           |               |       |
| 70 percent to 79 percent  |   |         |         |          |           |           |           |               |       |
| 80 percent to 89 percent  | 1   |         |         |          |           |           |           | 2             | 3     |
| 90 percent to 100 percent |   |         | 1       | 1        | 4         | 1         |           |               | 7     |
| Total                     | 1   |         | 1       | 1        | 7         | 2         | 2         | 6             | 20    |
| Median                    | 84%   |         | 86%     | 97%      | 97%       | 50%       | 50%       | 19%           | 59%   |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

Table 22. Classification of Twenty Warrant Issues Listed on the American Stock Exchange which Expired between January 1, 1950 and December 31, 1971 by Percentage Exercised and by Period of Exercise Relative to Expiration Date

| Cumulative Percentage Exercised | Number of Issues  |      |      |      |      |      |      |      |      |      |       |
|---------------------------------|---|------|------|------|------|------|------|------|------|------|-------|
|                                 | Number of Accounting Periods Preceding Period of Expiration |      |      |      |      |      |      |      |      |      |       |
|                                 | 10 or more  | 9    | 8    | 7    | 6    | 5    | 4    | 3    | 2    | 1    | 0     |
| Less than 1.0 percent           | 12  | 12   | 11   | 10   | 10   | 10   | 9    | 10   | 10   | 9    | 6     |
| 1.0 percent to 4.9 percent      |   | 1    | 1    | 1    | 2    | 3    | 2    | 2    | 2    | 2    | 1     |
| 5.0 percent to 9.9 percent      |   |      |      | 1    |      |      | 2    | 1    | 1    | 1    |       |
| 10.0 percent to 14.9 percent    |   |      |      | 1    |      |      |      | 2    | 1    | 1    | 1     |
| 15.0 percent to 19.9 percent    |   |      |      |      |      |      |      |      | 1    |      | 1     |
| 20.0 percent to 29.9 percent    |   |      |      |      | 1    |      |      |      |      | 1    |       |
| 30.0 percent to 39.9 percent    |   |      | 1    | 1    | 1    | 1    |      | 1    |      | 1    | 1     |
| 40.0 percent to 49.9 percent    |   |      |      |      | 1    | 1    | 1    |      |      |      |       |
| 50.0 percent to 59.9 percent    |   |      |      |      |      | 1    |      | 1    | 2    | 1    |       |
| 60.0 percent to 69.9 percent    |   |      |      |      |      |      | 1    |      |      | 1    |       |
| 70.0 percent to 79.9 percent    |   |      |      |      |      | 1    | 2    | 2    | 2    |      |       |
| 80.0 percent to 84.9 percent    |   |      |      |      |      |      |      | 1    | 1    | 2    | 1     |
| 85.0 percent to 89.9 percent    |   |      |      |      |      |      |      |      |      |      | 2     |
| 90.0 percent to 94.9 percent    |   |      |      |      |      |      |      |      |      | 1    |       |
| 95.0 percent to 100.0 percent   |   |      |      |      |      |      |      |      |      |      | 7     |
| Total                           | 12  | 13   | 13   | 14   | 15   | 17   | 17   | 20   | 20   | 20   | 20    |
| Median                          | 0.0%  | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.8% | 0.6% | 0.8% | 1.8% | 59.3% |

Source: Compiled from The Wall Street Journal, Moody's Industrial Manual, Moody's Public Utility Manual, Moody's Transportation Manual, Moody's Bank and Finance Manual, corporate annual reports, and Form 10-K Annual Report filings with the Securities and Exchange Commission.

each issue was just 1.8 percent. The conclusion is that warrants are not exercised until shortly before expiration unless there are other factors, usually contained in the warrant agreement, which induce early exercise.

The second most influential factor in inducing exercise of the warrants in this study was an escalation in the exercise price of the warrants prior to their expiration date. As shown in Table 22, there were four warrant issues in which 50 percent or more of the warrants had been exercised by the third period preceding the period of expiration. An analysis of these four issues reveals that the terms of each issue included at least one escalation of the exercise price. In fact, the four issues had a total of 11 escalations of the exercise price.<sup>46</sup>

One other factor was observed to have influenced the timing of the exercise of the 20 warrants in this study for which a complete history is available. Assuming the conditions precedent to exercise are met, announcement of a sizeable stock dividend will cause some warrant-holders to exercise if the warrant issue is not protected against dilution from stock dividends. This appears to have happened in the case of Armour and Company warrants. In fiscal 1959 Armour issued a 10 percent stock dividend. Almost 5 percent of its warrants were exercised in this period, apparently because the warrants were not protected against dilution from stock dividends.<sup>47</sup> Situations such as this are rare because most warrants are protected against dilution from large stock dividends.

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<sup>46</sup>See pages 119-122 for a discussion of the reasons that an escalation of the exercise price may induce exercise of the warrants.

<sup>47</sup>The fact that there was an escalation of the exercise price early in the 1960 fiscal year may also have induced some warrant-holders to exercise.

Other factors are also influential in inducing the exercise of warrants, although these factors were not encountered in the 20 warrant issues under study. Some of these factors will be discussed briefly.

Occasionally the theoretical value of a warrant may exceed its market price. This is most likely to occur when the market price of the warrant is high in relation to its exercise price. Under such conditions the market price of the underlying common stock is high in relation to the exercise price of the warrant. As a result, the premium on the warrant is likely to disappear because the warrant offers very little leverage. If the theoretical value of the warrant does exceed its market price, arbitrageurs may buy the warrants and sell the equivalent shares of common stock short. The warrants are then exercised to cover the short sale. The result is a small but almost certain profit to the arbitrageur. At the same time the price of the warrant will usually advance to its theoretical value.

Royer cites the perpetual warrants of Alleghany Corporation as an example of arbitrage. In 1961 approximately 45 percent of its 2,000,000 warrants were exercised by arbitrageurs because the theoretical value of the warrants exceeded their market price.<sup>48</sup>

An increase in the dividends on the underlying common stock may also induce the exercise of warrants. Theoretically exercise would occur when the cash dividend return on the exercise price of the common stock exceeded the cost of funds required for the exercise. Royer cites

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<sup>48</sup>P. Royer, "Long-Term Warrants as Financing Instruments," (unpublished Doctor's dissertation, The University of Michigan, 1970), p. 138.

Glenn L. Martin Company warrants as an example. When these warrants were issued in 1952, Martin was not paying a dividend. In 1954, when the company began paying a cash dividend of \$1 per share, approximately 95 percent of the warrants were exercised. The \$1 dividend represented a return of 10.5 percent on the exercise price of \$9.50.<sup>49</sup>

For completeness of discussion, two other factors which may induce the exercise of warrants should be mentioned at this point, although these factors have been discussed previously in this chapter.<sup>50</sup> A temporary reduction in the exercise price may result in the exercise of some warrants. Or, if the warrants are callable, a call for redemption of the issue will result in exercise if the theoretical value of the warrant is above the call price.

In summary, the potential dilution of shares outstanding of the 90 companies issuing warrants must be considered material. Further, although the median potential dilution of all companies over all time periods is 20.0 percent, it has increased from 19.4 percent during the 1967-1968 period to 30.0 percent during the 1969-1971 time period. The implication is that the dilution of earnings per share of those companies issuing warrants is likely to increase in the future if these warrant issues with higher potential dilution are exercised.

In general, potential dilution is higher for warrant issues in which the exercise price is set high in relation to the underlying common stock price. The treasury stock method, however, does not recognize

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<sup>49</sup>Ibid., p. 144.

<sup>50</sup>See pages 122-123 and pages 127-131.

this higher potential dilution until the market price of the common stock exceeds the exercise price of the warrants. The result is that warrants with less potential dilution, many of which are issued at lower exercise prices in relation to their related common stock prices, are reflected in earnings per share earlier than issues with greater potential dilution.

Evidence presented in this section indicates that the relationship between the exercise price of the warrant and the underlying common stock price has little or no bearing on the ultimate number of warrants which will be exercised and, hence, on the dilution of earnings per share except in the period immediately preceding the expiration date of the warrant or, in some cases, the period immediately preceding an escalation of the exercise price. During such periods, the relationship between the exercise price of the warrant and the market price of the common does assume importance in that a condition precedent to exercise is that the theoretical value of the warrant be positive. Many of the warrants will be exercised if the common price exceeds the exercise price; none will be exercised if the exercise price is greater than the common price. The conclusion is that determination of the common stock equivalence status of warrants on the basis of a relationship between the exercise price of the warrants and their underlying common stock price has no validity except in the period immediately before the expiration date.

Many warrants expire without exercise. The median percentage of exercise of the warrants in this study was only 59 percent. This median is highest when the exercise price is set in the range from 95 to 114 percent of the common stock price on date of issue. However, even

when the exercise price is high in relation to the common stock price, some warrant issues are exercised. Of the six warrant issues in this study with exercise prices higher than 135 percent of their respective common stock prices on date of issue, 80 percent or more of the warrants of two issues were exercised. This ratio of 33 1/3 percent compares favorably with a ratio of only 50 percent for the entire 20 issues in which there were 10 issues having 80 percent or more of their warrants exercised. In formulating guidelines for earnings-per-share computations, the fact that many warrant issues are not exercised must be considered.

#### SUMMARY AND CONCLUSIONS

Warrants have been used by companies in many industry groups. They were particularly popular with conglomerates during the period when APB Opinion No. 9 was in effect. While there were other reasons, such as the high level of merger activity, for using warrants during this period, part of their popularity must be attributed to the fact that warrants were not considered residual securities under the opinion.

Although warrant issues by conglomerates have declined since early 1969, usage by companies in other industries has increased to the extent that the number of issues continues to increase. Along with the greater number of issues there is also an increase in the potential dilution of each issue. Both the increased usage and the increased potential dilution of each issue can be attributed to the popularity of real estate investment trusts as tax shelters. Dividends per share of these trusts may exceed earnings per share as computed under APB Opinion



No. 15 for extended periods of time because of tax regulations in regard to the distribution of earnings and because of assumptions made with respect to warrants by the opinion.

Warrants are usually attached to other securities issued for purposes of: (1) raising cash, (2) acquiring the securities of another corporation, and (3) reorganization or recapitalization. The primary purpose of attaching warrants is to facilitate the sale or exchange of the securities to which the warrants are attached. Even when warrants are issued alone as distributions to stockholders, the fundamental purpose of the issue does not appear to be that of raising future equity capital. Instead, the basic reason appears to be that of establishing a market for the warrants which will then be used as a merger currency in future acquisitions. Regardless of management's reasons for issuing warrants, the possible effect is the issuance of additional equity securities, perhaps at an exercise price well below the current market price if the warrants are exercised.

Management has much flexibility in setting the terms for its warrant issues. Unfortunately, all terms must be included in the agreement when the warrants are originally issued. Terms which appear to provide some degree of control over an issue may be valueless 5 or 10 years later when management desires to force the exercise of an issue or to terminate its life without exercise. Terms over which management has control initially include: (1) initial exercise price, (2) changes in the exercise price, (3) means of payment of the exercise price, (4) warrant life, and (5) changes in warrant life.

In setting warrant terms management must strike a balance between

its goals and those of warrant investors because of conflicting interests. For example, the call privilege allows management more certainty in financial planning through the ability to force the exercise or the redemption of an issue. Few warrant issues include the call privilege, however, because of its detrimental effect on warrant prices. Similarly, the temporary-reduction-of-exercise-price feature is not permitted for warrants listed on the American Exchange because it is not conducive to an orderly warrant market.

The exercise price tends to be higher with respect to the market price of the underlying common stock when warrants are issued to a corporation's own security holders. This is true whether the warrants are distributed to the stockholders as a dividend, attached to common stock issued on a preemptive basis, or issued in a reorganization or recapitalization. On the other hand, when warrants are attached to debt instruments in a public offering or issued in a merger or acquisition, the exercise price tends to be lower with respect to the common stock price. Warrants with a low exercise price add more value per warrant to the total financial package than warrants with a higher exercise price. At the same time, however, these warrants are more likely to result in dilution of current stockholders' equity because the likelihood of exercise is greater.

The potential dilution of shares outstanding per warrant issue or series is increasing, suggesting that dilution in earnings per share will also increase. For the time period under study, the average potential dilution is 20 percent; however, it is 30 percent for the 1969-1971 period. Potential dilution for warrants which expired between 1950 and

1971, however, is considerably higher than actual dilution, 10.4 percent versus 2.1 percent. This difference is largely due to the fact that many warrant issues are not exercised. Of the 20 issues that expired during the period under study, 10 had an exercise ratio of less than 40 percent and 10 had a ratio greater than 79 percent. The median exercise ratio was approximately 59 percent.

Warrants are generally not exercised until shortly before their expiration date. Exercise prior to the expiration date, however, will sometimes occur if any of the following factors is present: (1) an escalation in the exercise price, (2) large stock dividend declared and warrants are not protected against dilution, (3) theoretical value of warrant exceeds its market price, (4) an increase in dividends on the underlying common stock, (5) a temporary reduction in the exercise price, or (6) a call for redemption when the theoretical value of the warrant is above the call price.

The data presented and analyzed in this chapter lead to the conclusion that a number of warrant characteristics need to be considered in the formulation of earnings-per-share computational guidelines. A discussion of these characteristics follows.

1. Warrants are not a part of the legal common equity. Instead, they are merely a contractual right to purchase common stock. Warrant-holders have no voice in management, and they do not participate in dividends except to the extent that their warrants are protected against dilution. This point is demonstrated by the experience of certain real estate investment trusts cited in this chapter. Due to the tax regulations of these trusts in regard to income distribution and to the

inclusion of warrants as common stock equivalents, dividends per share may exceed earnings per share. The fact that warrants are not legal common equity is, therefore, a characteristic which must be considered in formulating earnings-per-share computational guidelines.

2. Warrants are not issued for the primary purpose of raising common equity, although additional common equity will result if the warrants are exercised. Instead, management attaches warrants to other securities in order to facilitate their sale and lower interest or dividend rates. Since the financial statements reflect these benefits from the date of issue of the warrants, consideration should be given to apprising stockholders of the potential cost of these benefits in terms of dilution of their equity. Earnings per share is perhaps the most feasible method for accomplishing this purpose.

3. Warrants are not purchased for the primary purpose of acquiring common equity. The use of warrants for this purpose would be illogical because warrants almost invariably trade at a premium above their theoretical value. Rather, warrants are purchased for the leverage they offer investors. A given change in the price of the underlying common stock will usually produce a greater change in the warrant price. The result is a greater profit (or loss) per dollar invested. Warrant purchasers, therefore, favor the warrants of companies whose common stock has a history of high volatility.

4. Unless the warrant agreement contains special features or unusual circumstances occur, the majority of warrants which are ultimately exercised are not exercised until the period immediately prior to their expiration date. This characteristic is a complement of the

preceding characteristic; namely, warrants are purchased for the leverage they offer rather than for the purpose of acquiring common stock.

Special features which may induce exercise prior to the expiration date include exercise price escalations, temporary reduction of the exercise price, or a call provision. Warrants may also be exercised prior to their expiration due to an increase in the dividends paid on the underlying common stock. Stock dividends may also be a factor if the warrants are not protected by an anti-dilution provision.

5. Many warrants are never exercised. The basic reason for non-exercise is the failure of the issue to meet one of the conditions precedent to exercise which is that the theoretical value of the warrant must be positive in the period immediately preceding the expiration date of the warrant. Earnings-per-share computations should consider this factor.

6. In general, the lower the exercise price of the warrant is in relation to the price of the underlying common stock on the date of issue, the greater the value that the warrants will add to the security package being offered. As a result, fewer warrants can be offered per unit of capital solicited.

7. Ceteris paribus, the lower the exercise price of the warrant in relation to the related common stock price on the date of issue, the greater is the likelihood that the warrant will be exercised. This is merely a reflection of the fact that the market price of the common stock must exceed the exercise price of the warrant in the period immediately preceding the expiration date of the warrant if exercise is to occur. The lower the exercise price is in relation to the common price, the higher the probability that this condition will prevail.

8. On the average, the higher the exercise price of the warrant in relation to the price of the underlying common stock on the date of issue, the greater potential dilution of shares outstanding is likely to be. This follows as a corollary to Characteristic No. 6. When the exercise price is high in relation to the common price, each warrant contributes less value to the total package. Therefore more warrants per unit of capital are likely to be issued in a given transaction. However, actual dilution of shares outstanding may be less. As pointed out in Characteristic No. 7, the probability of exercise is less when the exercise price is high in relation to the common price.

9. Except in the period immediately preceding the expiration of the warrant, the relationship between the exercise price of the warrant and the market price of the underlying common stock has no bearing on the ultimate number of warrants which will be exercised. This is true unless unusual conditions such as a substantial increase in the dividend rate of the common stock cause exercise prior to the expiration of the warrant. The relationship between the exercise price and the common price does assume importance in the period in which the warrant expires. If the market price of the common stock exceeds the exercise price of the warrant, then practically all warrants will be exercised. If the market price of the common is lower than the exercise price during this period, then the warrants will expire without exercise.

Several of the preceding warrant characteristics could be used to support the argument that warrants are not common stock equivalents. For example, management does not issue warrants for the purpose of raising future common equity. Nor does the investor purchase warrants

for the purpose of acquiring common equity. Legally, warrants are not common equity until they are exercised, and, in fact, many issues are not exercised.

The fact remains, however, that any value a warrant may have is derived, directly or indirectly, from the value of the underlying common stock. Further, issuance of warrants is a management decision which may result in dilution of a current stockholder's equity. Current stockholders should, therefore, be informed of the results of this decision in terms of its potential cost as well as its benefits.

These factors, as well as the attributes of earnings per share, will be considered in Chapter 5 in formulating guidelines for computing earnings per share of companies with warrants outstanding. The common stock equivalency concept of APB Opinion No. 15 will be analyzed in Chapter 4 for this same purpose.

## Chapter 4

### THE CONCEPT OF COMMON STOCK EQUIVALENTS

The concept of common stock equivalents evolved from the residual security concept and is the end product of the Accounting Principles Board's efforts to make the residual security concept operational while retaining as much of the original theory as possible. The resolution of conflicts between theory and practice was no easy task. The Board spent over a year on the problem and prepared at least eight drafts of APB Opinion No. 15 in the process. A knowledge of the residual security concept and the problems of application presented by its theory is therefore essential to an understanding of the concept of common stock equivalents. A review of both concepts, in terms of the problems presented by the residual concept and the solutions adopted by the concept of common stock equivalents, will be helpful in formulating guidelines for the earnings-per-share computations of companies with warrants outstanding.

#### BACKGROUND--THE RESIDUAL SECURITY CONCEPT

The term residual security was first used by the Committee on Accounting Procedure in Accounting Research Bulletin No. 49. This bulletin, issued in April, 1958, made reference to the term as follows:

. . . Where used without qualification, the term earnings per share should be used to designate the amount applicable to each



share of common stock or other residual security outstanding.<sup>1</sup>

Since the bulletin offered no suggestions as to what types of securities might be included in the other residual security category, the purpose of this section is to determine the reasons for the development of the residual concept in APB Opinion No. 9 and to investigate the theory of the residual concept. In addition, the criteria for determining residual status under APB Opinion No. 9 and the Accounting Principles Board's early efforts to codify guidelines for determining residual status in its revision of APB Opinion No. 9 are examined.

#### Reasons for Development

The earnings-per-share literature during the period following the issuance of Accounting Research Bulletin No. 49 ignores residual securities completely. Rappaport, in his SEC Accounting Practice and Procedure, does cite a situation in which two classes of common stock are combined to compute earnings per share for registration statement purposes. He does not, however, use the term "residual security."

Rappaport's illustration deals with privately owned companies which rearrange their capitalization before going public. Frequently these companies provide for two classes of common stock, Class A and Class B. Both classes are alike in all respects except that Class B is entitled to a small dividend and is convertible into Class A at any time. The owners offer Class A shares to the public and retain the Class B

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<sup>1</sup>Committee on Accounting Procedure of the American Institute of Certified Public Accountants, Earnings per Share, Accounting Research Bulletin No. 49 (New York: American Institute of Certified Public Accountants, 1958), p. 30.

shares. Rappaport concludes that, because of the unrestricted convertibility, it is proper to combine the two classes to compute earnings per share.<sup>2</sup>

Accounting Research Bulletin No. 49 remained in effect until December, 1966 when it was replaced by APB Opinion No. 9. As discussed in Chapter 1,<sup>3</sup> investor interest in common stocks and other securities had increased tremendously during this period. The number of mergers had increased almost threefold. With mergers came a variety of complex securities designed to meet the needs of the acquiring company's management and the acquired company's security holders.

The increasing use of convertible preferred stock for merger purposes appeared to be a major concern of the Accounting Principles Board. This concern was indicated by Frank T. Weston in the following statement:

The genesis of the problem is the increasing vogue of convertible preferred stock. While convertible debt issues have had a fairly lengthy period of renewed popularity beginning a number of years ago, convertible preferreds have only lately come into widespread use, particularly those types with unusual characteristics.<sup>4</sup>

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<sup>2</sup>Louis H. Rappaport, SEC Accounting Practice and Procedure (2d ed.; New York: The Ronald Press Company, 1966), pp. 8.33-8.34. Rappaport concludes, however, that if the conversion and dividend rights are limited--for example, until certain levels of earnings are achieved--two earnings per share figures, one assuming conversion, may be necessary for full disclosure of the situation. This latter point is in accordance with Accounting Research Bulletin No. 49. See Committee on Accounting Procedure of the American Institute of Certified Public Accountants, Earnings per Share, Accounting Research Bulletin No. 49 (New York: American Institute of Certified Public Accountants, 1958), p. 32.

<sup>3</sup>See page 2.

<sup>4</sup>Frank T. Weston, "Increased Emphasis on Reporting Earnings per Share," Financial Analysts Journal, XXIII (July-August, 1967), 49.

Weston explained the reasons for the development of these convertible preferred stocks as follows:

. . . It appears that they were the response of ingenuous corporate managers to a combination of various pressures, including such diverse and apparently unrelated ones as (a) the desire to achieve poolings of interests accounting for a proposed business combination, thus necessitating a type of equity or ownership security, (b) the desire to obtain immediate earnings leverage following the combination by limiting the dividend requirements applicable to the stock to be issued, so that the hoped-for increase in earnings of the acquired entity would improve the earnings applicable to the common shares, (c) the necessity, in many cases as a condition of the proposed combination, to pay cash dividends in amounts equivalent to those previously received by the stockholders of the company being acquired and (d) the requirement that some features be added to the stock for the above purposes which would permit the recipients to share in the long-range potential of the combined business.<sup>5</sup>

Convertible preferred stock and convertible debt posed a difficult problem of valuation for analysts and investors in general. To the extent that their valuation is based on fixed dividend or interest features--senior security characteristics--convertible securities could be considered equivalent to other preferred stock or debt. However, to the extent that their valuation is based on conversion rights--a residual or equity security characteristic--these complex securities are more in the nature of common stock. As such, they share in the earnings and in the growth potential of the company in essentially the same manner as a true equity security.<sup>6</sup>

Under these circumstances, the Accounting Principles Board concluded that the conventional method of computing earnings per share might

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<sup>5</sup>Ibid.

<sup>6</sup>Ibid., 49-50.

be inappropriate. This is explained by Weston as follows:

The marketplace realistically evaluated the various characteristics, and it became clear, particularly in the more extreme cases, that, under certain conditions, these complex securities were basically equivalent to common shares. When such a determination could be made, it also became apparent that the classic method of computation of earnings per share applicable to the common shares was not appropriate; it would be improper to attribute all the earnings (above the preferred fixed dividend requirements) to the common shares when these complex preferred shares were, due to their forms, also entitled to share in the economic benefits of such earnings.

A method of overcoming this weakness in the classic method of computation when applied to these complex "residual-type" preferred stocks was therefore necessary.<sup>7</sup>

#### Theory of the Residual Concept

In order to solve the problem, the Accounting Principles Board developed the residual security concept that had been alluded to in Accounting Research Bulletin No. 49. Residual securities were defined in APB Opinion No. 9 as follows:

. . . When more than one class of common stock is outstanding, or when an outstanding security has participating dividend rights with the common stock, or when an outstanding security clearly derives a major portion of its value from its conversion rights or its common stock characteristics, such securities should be considered "residual securities" and not "senior securities" for purposes of computing earnings per share.<sup>8</sup>

The term earnings per share, therefore, included actual shares of common stock outstanding as well as shares potentially issuable under

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<sup>7</sup>Ibid., 50. Although this reference refers specifically to convertible preferred stock, Weston indicates on page 52 of the article that convertible debt issues may also qualify as residual securities.

<sup>8</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Reporting the Results of Operations, Opinions of the Accounting Principles Board, No. 9 (New York: American Institute of Certified Public Accountants, Inc., 1967), p. 120.

the terms of those securities classified as residual. APB Opinion No. 9 also required supplementary pro forma computations of earnings per share to disclose material potential dilution by other contingent issuances of common shares not included as residual securities in the earnings per share computation. Such contingent issuances included ". . . (a) outstanding senior stock or debt which is convertible into common shares, (b) outstanding stock options, warrants or similar agreements and (c) agreements for the issuance of common shares for little or no consideration upon the satisfaction of certain conditions . . . ." <sup>9</sup> The Board strongly recommended that both earnings-per-share computations be disclosed in the statement of income.

As a theory, the residual security concept was conceptually sound. A security was residual if it derived a substantial portion of its value from its common stock characteristics rather than from its investment value as a senior security. Under these circumstances the value of the security is dependent, to some extent, upon the value of the related common stock. The value of the common stock, in turn, is dependent, in part at least, upon its earning power. This earning power, under the terms of the residual issue, may be shared with the residual security owners. The residual security concept, therefore, leads to the conclusion that residual securities should be treated as common stock for purposes of computing earnings per share.

The residual security concept is supported by a number of the basic accounting concepts which underlie generally accepted accounting

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<sup>9</sup>Ibid., p. 123.

principles. Comment on two of these concepts is appropriate because critics have used the logic on which these concepts are based as arguments against the residual concept. These concepts are substance over form and approximation.<sup>10</sup>

Substance over form. Critics have argued that, legally, residual securities are not common stock since residual security holders do not generally have the usual rights associated with common stock. Such security holders do not vote or participate in dividends with common shareholders. These critics therefore argue that residual securities should not be included in the earnings-per-share computations. This line of reasoning ignores the well-established concept of substance over form. The concept is explained by the Accounting Principles Board as follows:

. . . Usually the economic substance of events to be accounted for agrees with the legal form. Sometimes, however, substance and form differ. Accountants emphasize the substance of events rather than their form so that the information provided reflects the economic activities represented.<sup>11</sup>

The fact that residual securities are not legally common stock is, therefore, not a valid reason for rejecting the residual security concept.

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<sup>10</sup>These concepts are called features by the Accounting Principles Board. See Accounting Principles Board of the American Institute of Certified Public Accountants, Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises, Statement of the Accounting Principles Board No. 4 (New York: American Institute of Certified Public Accountants, Inc., 1970), pp. 44-48.

<sup>11</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises, Statement of the Accounting Principles Board No. 4 (New York: American Institute of Certified Public Accountants, Inc., 1970), p. 48.

If residual securities are in substance the equivalent of common stock, their inclusion in the computation of earnings per share may result in a better presentation of the economic realities of the situation.

Approximation. Another criticism raised by opponents of the residual security concept is the necessity of estimates in classifying securities as residual. Under APB Opinion No. 9 a security was residual if it derived a substantial portion of its value from its common stock characteristics. In practice this meant estimating the security's investment value from its senior security characteristics and comparing this estimate with its total value. The investment value estimate was usually determined by capitalizing the security's cash yield at a rate appropriate for the risk assumptions. The necessity of estimates in determining residual status does not invalidate the residual security concept since approximation is a basic concept of accounting. Estimates are necessary if accounting is to provide timely information.<sup>12</sup>

Criteria for Determining Residual  
Status under APB Opinion No. 9

Under the residual concept ". . . neither conversion nor the imminence of conversion is necessary to cause a security to be a common stock equivalent."<sup>13</sup> The right to convert and the fact that the security is deriving a substantial portion of its value from that right are

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<sup>12</sup>Ibid., pp. 46-47.

<sup>13</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 6. (Mimeographed.)

factors that make the security a residual one. An integral part of the original residual security concept theory was the fact that the residual equity of a corporation (hence its capital structure) may change as the result of fluctuations in the securities and money markets.<sup>14</sup> The number of shares used in the earnings-per-share computation, therefore, could vary from period to period in accordance with market fluctuations even though the actual common shares outstanding remained constant. To be consistent, the theory did not permit retroactive adjustments of prior period earnings-per-share statistics when changes in residual status occurred. The reason for this conclusion was that financial statements are primarily historical in nature and should reflect the capitalization structure as it existed during each period presented.<sup>15</sup>

Potential dilution of earnings per share was not one of the criteria for establishing residual status under APB Opinion No. 9. Potential dilution could not be a criterion if the residual concept was to be internally consistent because, under certain conditions, a security classified as residual could increase earnings per share. In contrast, the sole criterion for including convertible and option securities in supplementary pro forma earnings per share was the potential dilution of earnings per share. APB Opinion No. 9 strongly recommended disclosure of supplementary pro forma earnings per share if earnings per share might be subject to dilution through contingencies permitting the issuance of common shares in the future.<sup>16</sup> The resulting

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<sup>14</sup>Ibid., pp. 6-7.

<sup>15</sup>Ibid., pp. 8-9.

<sup>16</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Reporting the Results of Operations, Opinions of the Accounting Principles Board, No. 9 (New York: American Institute of Certified Public Accountants, Inc., 1967), pp. 123-124.



inconsistency between the two methods of computing earnings per share was resolved by the Board by excluding residual securities from the dilution requirements of pro forma earnings per share.<sup>17</sup>

Early Efforts to Codify Guidelines  
for Residual Status

During the two years in which APB Opinion No. 9 was in effect, the concept of residual securities became ". . . established in the financial community as a logical approach to the computation of earnings per share when complex securities with common stock characteristics are outstanding."<sup>18</sup> However, the concept presented certain implementation problems which were inherent in the theory. The Accounting Principles Board's first published effort aimed at resolving these conflicts between theory and practice was an exposure draft circulated to members of the Institute and the financial community in November, 1968. In this and earlier drafts, the Board chose to adhere almost literally to the residual concept. In fact, the exposure draft merely clarified the residual concept of APB Opinion No. 9 and furnished guidelines to provide consistency in its application. The Board's efforts to codify guidelines for determining the residual status of convertible securities and warrants are discussed in this section.

Convertible securities. APB Opinion No. 9 provided no specific

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<sup>17</sup>Ibid., p. 123.

<sup>18</sup>Frank T. Weston and Sidney Davidson, "What Will Accounting Changes Do to Earnings?" Financial Analysts Journal, XXIV (September-October, 1968), 59.

guidelines for determining the residual status of securities other than that contained in the definition of residual securities. Consequently the "major-portion-of-value" test in the definition of residual securities by APB Opinion No. 9 was used to determine the residual status of convertible securities. The Accounting Principles Board described the procedure as follows:

. . . In practice this test has been applied by comparing a convertible security's market value with its investment value, and the security has been considered to be residual whenever more than half its market value was attributable to its common stock characteristics at time of issuance. Practice has varied in applying this test subsequent to issuance with a higher measure used in many cases. Thus, a convertible security's status as a residual security has been affected by equity and debt market conditions at and after the security's issuance.<sup>19</sup>

Most of the Board's early efforts in revising APB Opinion No. 9 were directed towards establishing guidelines to determine the residual status of convertible securities. The objective was to provide for a consistency of application in practice within the framework of the residual concept. The basic criterion for determining the residual status of convertible securities, the relationship between the convertible security's market price and its investment value, was retained.<sup>20</sup> A

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<sup>19</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Earnings per Share, Opinions of the Accounting Principles Board, No. 15 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 220.

<sup>20</sup>An alternate method of determining residual status, called the market parity test, was also considered by the Board. It was first presented in the Lytle-Schuetze Draft dated October 3, 1968 and retained as a possible option in the exposure draft of November 6, 1968. The market parity test compares the convertible security's market value to the market value of the security into which it is convertible. If the market prices of the two securities are substantially equivalent, the convertible security is considered to be residual. The advantage of this test,

convertible security, however, was classified as residual if its market price was 150 percent or more of its investment value on the date of issue whereas 200 percent had been used under APB Opinion No. 9. Guidelines were also established for determining the residual status after issuance and for determining reversion to nonresidual status. In an effort to prevent frequent changes in status caused by temporary fluctuations in market prices, the Board established a minimum period for which a given status would remain in effect. Various guidelines for determining the residual status of convertible securities under the investment value test were considered by the Board. Those considered through the date of the exposure draft of November 6, 1968 are shown in Table 23.

Warrants. The November 6, 1968 exposure draft also clarified the status of warrants as residual securities. Practitioners had not considered warrants residual under APB Opinion No. 9.<sup>21</sup> The rationale for treating warrants as nonresidual is not clear. Certainly warrants derive a major portion of their value from their common stock

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as compared with the investment value test described above, is the use of more readily available market prices. Thus the problem of estimating the investment value of a convertible security is eliminated. A majority of the Board preferred the investment value test because it more directly supported the tenets of the residual concept as presented in APB Opinion No. 9. See Accounting Principles Board of the American Institute of Certified Public Accountants, Lytle-Schuetze Draft, Proposed APB Opinion: Earnings per Share, October 3, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), pp. 20-21 and Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), pp. 8 and 27.

<sup>21</sup>Samuel L. Hayes, III and Henry B. Reiling, "Sophisticated Financing Tool: The Warrant," Harvard Business Review, XLVII (January-February, 1969), 144.

Table 23. Various Guidelines Considered by the Accounting Principles Board of the American Institute of Certified Public Accountants for Determining the Residual Status of Convertible Securities under the Investment Value Test

| Date of Draft | Total Value of Convertible Security as a Percentage of Its Investment Value |                             |                                 | Period in Status before Change of Status Permitted |
|---------------|---|-----------------------------|---------------------------------|--|
|               | To Classify as Residual   |                             | To Revert to Nonresidual Status |  |
|               | On Date of Issue  | Subsequent to Date of Issue |                                 |  |
| 8/28/68       | 150% or more  | 200% or more                | 100% or less                    | 6 months<br>6 months<br>3 months                   |
| 9/18/68       | 150% or more  | 200% or more                | 100% or less                    | 6 months<br>6 months<br>3 months                   |
| 10/3/68       | 150% or more  | 150% or more                | 100% or less                    | 6 months<br>6 months<br>6 months                   |
| 11/6/68       | 150% or more  | 200% or more                | 110% or less                    | 6 months<br>6 months<br>6 months                   |

Source: Compiled from drafts of the proposed earnings per share opinion prepared by the Accounting Principles Board of the American Institute of Certified Public Accountants.

characteristics. In fact, warrants have no senior security characteristics nor do they have an investment value because they do not pay interest or dividends.

Hayes and Reiling, although opposed to the idea that warrants were nonresidual, offered the following reasons why warrants might have been considered nonresidual:

Furthermore, since warrants, unlike common stock, do not represent ownership in a company, they carry no voting rights, no rights to dividends, and no claim on assets in liquidation. In addition, a fixed price must be paid the issuer on their exercise; they are merely contract rights like options and are therefore not within the traditional debt or equity balance sheet classification; and, finally, they are arguably not even "securities." These are grounds for the claim that a warrant does not have enough common stock characteristics to conform to the second part of the APB's definition of residuals.<sup>22</sup>

Perhaps the Board did not specifically include warrants in its definition of residual securities because the use of warrants had declined drastically in the middle 1960's when APB Opinion No. 9 was written.<sup>23</sup> However, by 1968 when the exposure draft for APB Opinion No. 15 was being written, there was some evidence that warrants were being used as a substitute for convertible securities in order to avoid the adverse effect of residual securities on earnings per share. For example, only five warrant issues listed on the American Stock Exchange during the period from 1960 through 1966 originated in conjunction with mergers and acquisitions. There were, however, 11 such issues during

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<sup>22</sup>Ibid.

<sup>23</sup>See page 77 on this point.

1967 and 1968.<sup>24</sup> In late 1968 and early 1969 corporations began using warrants in lieu of cash or stock dividends.<sup>25</sup> And in October, 1968 LTV, Inc. made liberal use of warrants as part of a unit of securities offered in exchange for its common stock.<sup>26</sup> This employment of warrants in new areas, as well as the increased usage of warrants generally, probably influenced the Board to include warrants as a residual security in the November 6, 1968 exposure draft.

In the formulation of guidelines for the classification of warrants as residual securities, the Board in early drafts appeared to equate the relationship between the exercise price of warrants and the market price of the underlying common stock with the relationship between the market price of a convertible security and its investment value. A comparison of Tables 23 and 24 indicates that the respective relationships, expressed as percentages, were the same in the August and September, 1968 drafts. In subsequent drafts, the residual status of warrants was made more inclusive by reducing the percentages.

The classification of warrants as residual securities presented the Board with an additional problem not encountered in convertible securities. The exercise of warrants usually results in a receipt of funds by the issuing corporation. Therefore some assumption must be made as to the use of these funds and the return thereon. As indicated in Table 24, the Board considered several methods of imputing a return on the funds

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<sup>24</sup>See Table 2, page 89. For further discussion of the use of warrants for mergers and acquisitions related specifically to conglomerates, see pages 82 and 84.

<sup>25</sup>See pages 101-103.

<sup>26</sup>See pages 104-105.

Table 24. Various Guidelines Considered by the Accounting Principles Board of the American Institute of Certified Public Accountants for Determining the Residual Status of Warrants and the Assumed Use of Funds from Exercise

| Date of Draft | Market Price of Underlying Common Stock<br>as a Percentage of<br>Exercise Price of Warrant |                                |                                       | Period in Status<br>before Change of<br>Status Permitted | Assumed Use of<br>Funds from<br>Exercise <sup>a</sup> |
|---------------|--|--------------------------------|---------------------------------------|--|---|
|               | To Classify as Residual  |                                | To Revert to<br>Nonresidual<br>Status |  |   |
|               | On Date of<br>Issue  | Subsequent to<br>Date of Issue |                                       |  |   |
| 8/28/68       | 150% or more   | 200% or more                   | 100% or less                          | 6 months<br>6 months<br>3 months                         | 1, 2, 3, 4  |
| 9/16/68       | 150% or more   | 200% or more                   | 100% or less                          | 6 months<br>6 months<br>3 months                         | 1, 2, 3, 4  |
| 10/3/68       | 125% or more   | 125% or more                   | 100% or less                          | 6 months<br>6 months<br>6 months                         | 1, 2, 3, 4  |
| 11/6/68       | 125% or more   | 150% or more                   | 100% or less                          | 6 months<br>6 months<br>6 months                         | 1, 5, 2, 3  |

Source: Compiled from drafts of the proposed earnings per share opinion prepared by the Accounting Principles Board of the American Institute of Certified Public Accountants.

<sup>a</sup>Key to the assumed use of funds: (1) Consistent with the company's financial policies; (2) The rate of interest being paid on outstanding debt, less tax-effect; (3) An assumed investment in government or similar obligations, less tax-effect; (4) The assumed use of funds to purchase stock of the issuing company at current price; (5) The current borrowing rate of the company, less tax-effect.

assumed to be received from exercise. This problem will be considered in the following section of this chapter.

#### THE DEVELOPMENT OF THE CONCEPT OF COMMON STOCK EQUIVALENTS

The exposure draft of November 6, 1968 was circulated to the full membership of the American Institute of Certified Public Accountants and to other interested members of the financial community. As previously discussed, this draft adhered almost literally to the original residual concept. As a result, the emphasis of the draft was on the codification of guidelines for determining the status of residual securities.

The magnitude of the opposition to the residual concept was perhaps surprising in view of Weston and Davidson's statement of its acceptance by the financial community.<sup>27</sup> As indicated in Table 25, many influential accounting and finance organizations disapproved of the concept as it was presented in the exposure draft. The Accounting Principles Board also received many letters from corporate executives expressing dissatisfaction with the concept. The Financial Executives Institute, in a poll of its members, found that 74 percent of those responding disapproved of the concept as interpreted by the exposure draft.<sup>28</sup>

As a result of the broad opposition to the residual concept as

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<sup>27</sup>See page 172.

<sup>28</sup>"Proposed APB Opinions on 'Earnings per Share' and 'Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants,'" Financial Executive, XXXVIII (March, 1969), 12.



Table 25. Summary of Selected Comments of Certain Accounting and Finance Organizations on the November 6, 1968 Exposure Draft of the Proposed Opinion on Earnings per Share by the Accounting Principles Board of the American Institute of Certified Public Accountants

| Comments  | Organizations <sup>a</sup> |   |   |   |   |   |   |   |
|---|----------------------------|---|---|---|---|---|---|---|
|   | 1                          | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Residual Concept in General   |                            |   |   |   |   |   |   |   |
| Approve with reservations   | X                          |   | X |   |   | X |   |   |
| Disapprove  |                            | X |   | X | X |   | X | X |
| Guidelines for Determining Residual Status of Convertible Securities  |                            |   |   |   |   |   |   |   |
| Prefer investment values test   |                            | X |   |   |   |   |   |   |
| Prefer market parity test   |                            |   |   | X | X |   |   | X |
| Prefer test based on dilutive effect of other securities on earnings per share of common stock              | X                          |   |   |   |   |   |   |   |
| Assumptions as to Use of Warrant Proceeds   |                            |   |   |   |   |   |   |   |
| Prefer those recommended in exposure draft  |                            | X |   |   |   |   |   |   |
| Prefer other assumptions  | X                          |   |   |   |   |   |   |   |
| Objections to Proposed Opinion  |                            |   |   |   |   |   |   |   |
| General   |                            |   |   |   |   |   |   |   |
| Too complex and confusing   |                            | X |   | X |   |   |   | X |
| Determination of earnings per share not an accounting issue, but one of security valuation                  |                            |   | X |   |   |   |   |   |
| The method of calculating a particular earnings-per-share figure is a function of the purpose of the figure |                            |   |   |   |   |   | X |   |
| Specific  |                            |   |   |   |   |   |   |   |
| Change of status between residual and nonresidual   |                            |   |   | X |   | X | X | X |
| Prohibition of restatement of earnings per share to reflect changes in residual status                      |                            |   |   | X | X |   | X |   |
| Increase in primary earnings per share caused by residual securities  | X                          |   |   |   |   |   |   |   |
| Changes in earnings per share caused solely by changes in market price of securities                        |                            | X | X | X | X | X | X |   |

Table 25 (Continued)

| Comments   | Organizations <sup>a</sup> |   |   |   |   |   |   |   |
|--|----------------------------|---|---|---|---|---|---|---|
|  | 1                          | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Specific (continued)   |                            |   |   |   |   |   |   |   |
| Arbitrary selection of residual guidelines   |                            | X | X | X | X |   | X | X |
| Fully diluted earnings per share should include securities which increase earnings per share   |                            |   |   |   |   | X |   |   |
| Earnings-per-share figures which are pro forma should be labelled as such. Both earnings-per-share figures in exposure draft are pro forma |                            |   |   |   |   |   | X |   |
| Alternate Proposal   |                            |   |   |   |   |   |   |   |
| Two earnings per share, one based on actual common shares outstanding and the other assuming full dilution                                 |                            | X | X | X | X | X | X | X |

Source: Compiled from comment letters received by the Accounting Principles Board in response to their Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968.

<sup>a</sup>Key to organizations responding: (1) Securities and Exchange Commission; (2) Corporate Reporting Committee of the Financial Executives Institute; (3) Financial Accounting Policy Committee of the Financial Analysts Federation; (4) Accounting and Auditing Research Committee and Research Staff of the Canadian Institute of Chartered Accountants; (5) Airline Finance and Accounting Conference; (6) Retail Committee on Accounting Principles of the Controllers Congress of the National Retail Merchants Association; (7) Task Force Committee of American Accounting Association on Exposure Drafts of Proposed APB Opinions on Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants and Earnings per Share dated November 6, 1968; (8) Corporation Finance Committee of the Investment Bankers Association of America.

presented in the exposure draft, the Accounting Principles Board made extensive changes in the concept. Consequently, the term residual was abandoned in favor of the term common stock equivalents in all drafts prepared subsequent to the exposure draft of November 6, 1968. Footnote 1 of the February 24, 1969 draft explained the change as follows:

. . . APB Opinion No. 9 refers to certain securities as residual securities and the determination of residual status is based upon the market value of the security as it relates to investment value. In this Opinion, the Board establishes the term common stock equivalents as being more descriptive of the classes of securities other than common stock which should be considered in the determination of primary earnings per share. Underlying concepts which is [sic.] somewhat similar to the residual concept and the criteria for determining common stock equivalent status are set forth in this Opinion.<sup>29</sup>

The concept of common stock equivalents, therefore, evolved as a result of the Board's modification of the residual concept. This modification was necessary in order to provide guidelines for computing earnings per share which could be implemented in practice on a consistent basis. Most of the objections to the residual concept were a result of the basic theory that securities could move in and out of residual status through changes in market prices or investment values. This problem of changes in residual status, which destroyed the inter-period and intercompany comparability of earnings per share, was heightened by virtue of the impossibility of devising guidelines for determining residual status which were not arbitrary.

Major problem areas created by the residual concept were the

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<sup>29</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Draft, Proposed APB Opinion: Earnings per Share, February 24, 1969 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 2. (Mimeographed.)

retroactive adjustment of earnings per share for changes in residual status, the enhancement of earnings per share by residual securities, and the use of funds from the assumed exercise of warrants. The Accounting Principles Board had considered these problems in formulating the guidelines set forth in the exposure draft but the solution of some of these problems would have required abandonment or extensive modification of the residual concept. Since the Board had chosen to retain the residual concept of APB Opinion No. 9, the guidelines provided by the exposure draft did little to resolve these problems. Having failed in its attempt to adapt the theory of the residual concept to practice, the Board in effect reversed its mode of operation. It resolved the problems created by the residual concept on a practical basis in terms of the desired end results and then created the concept of common stock equivalents to support those results.

A discussion of the major problem areas which the Board encountered in its attempt to make the residual concept operational follows. In general, the organization of the discussion of each problem area is as follows: (1) a description of the problem, (2) the solution adopted by the exposure draft of November 6, 1968, (3) the reaction of the financial community as expressed in comment letters to the Board, and (4) the resolution of the problem under the concept of common stock equivalents in APB Opinion No. 15.

#### Retroactive Adjustment for Changes in Residual Status

The question of whether or not the change in status of a security from nonresidual to residual or vice versa should affect the

earnings-per-share computations only on a prospective basis or also retroactively presented the Accounting Principles Board with a dilemma. A discussion of this problem, the proposed solution under the residual concept, the reaction of the financial community to that solution, and the solution adopted under the concept of common stock equivalents follows.

The problem. Traditionally earnings per share had always been computed on the basis of the capital structure which existed in each period. Retroactive adjustment for changes in capital structure were prohibited. This policy was reaffirmed by APB Opinion No. 9 as follows:

. . . Accordingly, the computations of earnings per share in annual reports to stockholders, whether related to the formal statements in comparative form for two years or to the historical summaries covering a period of years, should usually be based on the capitalization structure existing during each period. . . . The principal exception . . . occurs when a pooling of interests has occurred. . . . Other exceptions to this treatment are the result of (a) stock splits or reverse splits, and (b) stock dividends . . . .<sup>30</sup>

In other words, earnings-per-share data as well as the related financial statements are primarily of an historical nature and should not be affected by subsequent events.

On the other hand, a basic premise of the residual concept was that the capital structure of a corporation actually changed as the relative values of its convertible securities changed. The Lytle-Schuetze

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<sup>30</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Reporting the Results of Operations, Opinions of the Accounting Principles Board, No. 9 (New York: American Institute of Certified Public Accountants, Inc., 1967), pp. 124-125.

Draft of October 3, 1968 explains this aspect of the residual concept as follows:

. . . Holders of this view believe that if a corporation has securities outstanding which may become common stock the real capital structure of the corporation shifts depending upon the relative values of the outstanding securities. They believe that if a security which is not yet a common stock merely because a holder has not exercised his privileges derives a substantial portion of its value from its right to become common stock or from its other common stock characteristics, then that security should be considered the equivalent of common stock for the purposes of calculating primary earnings per share.<sup>31</sup>

Under this point of view, changes in residual status did not affect the comparability of earnings per share. The logic supporting this statement is as follows:

. . . Those who subscribe to this view are cognizant of the fact that securities may acquire and lose residual status depending upon factors beyond the control of the issuer or holder of the security. Although such movements may cause periodic earnings per share to lack comparability on their face, those who uphold this view believe that these movements and their concomitant effect on earnings per share truly portray the real shifts in a corporation's capital structure.<sup>32</sup>

Philip L. Defliese, Chairman of the Subcommittee on Convertible and Participating Securities, in a letter to the Accounting Principles Board members, pointed out the consequences of not permitting retroactive adjustment of earnings per share under the residual concept. He stated:

. . . prospective treatment, in a sense, detracts from the comparability of EPS data--there is little question but that a company would have some cause to be disturbed if its total earnings increased and, as a result, the market price of stock went up, but then its primary earnings per share declined because of a change in

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<sup>31</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Lytle-Schuetze Draft, Proposed APB Opinion: Earnings per Share, October 3, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 12. (Mimeographed.)

<sup>32</sup>Ibid., pp. 11-12.

status of a convertible security to that of a residual (of course, there could be equal cause for concern if earnings and stock prices declined but EPS increased).<sup>33</sup>

Defliese presented the argument against retroactive adjustment of earnings per share for changes in residual status as follows:

. . . Retroactive treatment of the change weakens the view of a residual security as a somewhat basic concept and consequently the need for its use in primary earnings per share data as long as pro forma earnings per share data are given. It also opens the question of retroactive treatment for actual conversions in order to be consistent.<sup>34</sup>

In the November 6, 1968 and all prior drafts, the Board chose not to weaken the residual security concept by allowing retroactive adjustment of earnings-per-share data for changes in residual status or for actual conversions of convertible securities or the exercise of options and warrants. Disclosure of supplementary earnings per share data giving effect to such events was permitted, however.<sup>35</sup>

Comments of the financial community. As Table 25 on pages 180 and 181 indicates, most accounting and finance organizations were opposed to the guidelines which permitted changes in status between residual and nonresidual without allowing the retroactive restatement of earnings per share to reflect those changes. Although not indicated in Table 25,

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<sup>33</sup>Letter from Philip L. Defliese, Chairman of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants to members of the Accounting Principles Board of the American Institute of Certified Public Accountants dated June 18, 1968.

<sup>34</sup>Ibid.

<sup>35</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 10. (Mimeographed.)

the Securities and Exchange Commission had earlier expressed a preference for retroactive application. The views of members of the Securities and Exchange Commission on the proposed opinion had been obtained in a meeting with members of the Subcommittee on Convertible and Participating Securities on August 1, 1968. The Securities and Exchange Commission, however, did not take exception to the disallowance of retroactive application in their comment letter on the exposure draft of November 6, 1968. Indications are that the Commission accepted as a compromise the recommendation of the exposure draft that disclosure of the effect of changes in residual status be made in a note to the financial statements.<sup>36</sup>

Many of the comment letters received from financial executives of major corporations took exception to the prohibition of retroactive adjustment of earnings per share for changes in residual status. The consensus of opinion was that failure to restate earnings per share for prior periods destroyed the usefulness of the data for comparative purposes. The following comments are typical:

. . . the rule forbidding the restatement of prior years figures disregards the basic use that is made of historical earnings per share--the establishment of trends for use in making investment decisions. Paragraph 10 of the exposure draft indicates this quite explicitly, pointing out that one purpose of earnings per share data is to provide assistance to the investor in respect to changes in the business entity's net income from period to period in relation to the shares the investor owns. This paragraph also says that earnings per share are used in

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<sup>36</sup>Memorandum prepared by Robert N. Sempier, Assistant Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, for the convertible securities file of the Accounting Principles Board of the American Institute of Certified Public Accountants dated August 5, 1968.



evaluating past earnings performances of a business and in forming an opinion as to its future potential, etc. It seems obvious that erratic changes in earnings per share figures arising from changes in the residual status of convertible securities would destroy all usefulness to the investor for this purpose.<sup>37</sup>

. . . The fundamental error contained in the Exposure Draft is the omission of a provision for the retroactive adjustment of the statements of prior years. The only justification for dealing with an imputed recapitalization for the current year lies in the assumption that the true nature of the original security had become disclosed by events occurring subsequent to issuance. If such an event occurs several years after the date of issuance, it would seem completely proper to adjust not only the most recent year but rather each year in which that security was outstanding. To assert that the same security is residual in one column of a statement while handling it as common in the second column of that same statement would negate all sense of logic.<sup>38</sup>

Because we feel that the prior year's statements are presented to provide a reference point or "bench mark" for judging current year's performance, we advocate restatement of the prior year whenever a conversion in the current year results in significant dilution of earnings per share. Restatement would especially be necessary if the proposed definitions of "residual" securities are sustained. At least, restatement for consistency would require only one arbitrary decision and the result would stand for the entire period being reported on. It follows that we would also treat a security as residual for the entire year in which it becomes residual.<sup>39</sup>

Solution under the concept of common stock equivalents. Despite the objections of the financial community, the Accounting Principles

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<sup>37</sup>Letter from J. P. McFarland, President and Chief Executive Officer of General Mills, Inc. to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 10, 1969.

<sup>38</sup>Letter from H. C. Knortz, Senior Vice-President and Comptroller of International Telephone and Telegraph Corporation to the Accounting Principles Board of the American Institute of Certified Public Accountants dated December 23, 1968.

<sup>39</sup>Letter from Eugene H. Irmingh and R. W. Halliday, Comptroller and Executive Vice-President--Finance, respectively, of Boise Cascade to the Accounting Principles Board of the American Institute of Certified Public Accountants dated December 7, 1968.

Board adhered to the principle that ". . . information in financial statements is of an historical nature and should not be affected by subsequent events."<sup>40</sup> Consequently, all of the drafts prepared after the November 6, 1968 exposure draft, as well as APB Opinion No. 15, contained the requirement that changes in outstanding securities from the exercise of options, conversions, or changes in residual status should be reflected in the computation of earnings per share only from the time the change occurred. Other changes in the final opinion, however, alleviated the problem of retroactive adjustment to some extent.

Under the concept of common stock equivalents, the status of convertible securities is determined at date of issue only. Consequently the problem of retroactive adjustment was avoided because securities do not change status after the original classification.<sup>41</sup> In theory, warrants are always common stock equivalents. The problem of retroactive adjustment remains, however, because of the method chosen

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<sup>40</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 8. (Mimeographed.)

<sup>41</sup>Convertible securities classified as common stock equivalents, however, would be excluded from the earnings-per-share computation if the effect was to increase primary earnings per share or decrease the loss per share as otherwise computed. The basis ultimately adopted by the Board in APB Opinion No. 15 for classifying convertible securities as common stock equivalents was a yield test. A convertible security was classified as a common stock equivalent if, based on the security's market price at the time of issuance, it had a cash yield of less than 66 2/3 percent of the then current bank prime interest rate. See Accounting Principles Board of the American Institute of Certified Public Accountants, Earnings per Share, Opinions of the Accounting Principles Board, No. 15 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 229.

by the Board for calculating the number of common stock equivalents.

As indicated in Table 24 on page 178, various assumptions about the use of funds from the exercise of warrants had been considered by the Board through the date of the release of the November 6, 1968 exposure draft. Drafts after this date as well as the final opinion used the treasury stock method in various forms for determining the common stock equivalency of warrants. Under the treasury stock method the common stock equivalents attributable to warrants vary inversely with the market price of the underlying common stock. Consequently the problem of retroactive adjustment of earnings per share remains because the number of common stock equivalents attributable to a given warrant issue is not constant from period to period. Consideration must be given to this attribute of the treasury stock method in drafting guidelines for the computation of earnings per share of companies with warrants outstanding.

#### Anti-dilution

Another predicament resulting from the residual security concept--the enhancement of primary earnings per share by residual securities--caused the Accounting Principles Board some concern. The following discussion deals with this problem under the residual concept, the opposition to the residual concept solution, and the final resolution under the concept of common stock equivalents.

The problem. The theory underlying the residual concept was based on market relationships rather than on potential dilution. A security was residual if it derived a major portion of its value from

its common stock characteristics. If the residual theory was to be internally consistent, residual securities which enhanced primary earnings per share also had to be included. The Subcommittee on Convertible and Participating Securities of the Accounting Principles Board, charged with the revision of APB Opinion No. 9, accepted this conclusion from the beginning of its deliberations. This is indicated by the discussion memorandum of an April 2, 1968 meeting as follows:

. . . The subcommittee has concluded (with P. L. Defliese dissenting) that a security should be classified as a residual if the appropriate market relationships prevail regardless of a resultant increase in reported common earnings per share. This decision was largely based on the view that the residual classification represents a basic concept.<sup>42</sup>

The Subcommittee also reaffirmed the provisions of APB Opinion No. 9 with respect to pro forma earnings per share. The criterion for the inclusion of convertible securities was potential dilution to earnings per share rather than the market relationships criterion of primary earnings per share. This is shown by the following excerpt from the discussion memorandum of the April 2 meeting:

. . . The subcommittee concluded that the intent of paragraph 43 as expressed in its first sentence--that "earnings per share may be subject to dilution in the future if any existing contingencies permitting issuance of common shares eventuate"--leads to a conclusion that pro forma per share earnings should include only those convertible securities whose conversion would result in dilution of common earnings per share and should exclude others.<sup>43</sup>

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<sup>42</sup>Discussion memorandum enclosed in a letter from Philip L. Defliese, Chairman of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, to members of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants dated April 10, 1968, p. 4.

<sup>43</sup>Ibid., p. 8.

As a result, the dilution criterion of pro forma earnings per share was inconsistent with the market relationships criterion of primary earnings per share when a security classified as residual increased earnings per share. In early drafts and in the exposure draft of November 6, 1968 this conflict was resolved by excluding residual securities from the provisions of the dilution criterion in computing pro forma earnings per share.<sup>44</sup> In APB Opinion No. 15 the problem was resolved by excluding from the primary earnings-per-share computation ". . . common stock equivalents or other contingent issuance for any period in which their inclusion would have the effect of increasing the earnings per share amount or decreasing the loss per share amount otherwise computed."<sup>45</sup>

Opposition within the Subcommittee. The eventual exclusion of common stock equivalents having the effect of reverse dilution from the computation of primary earnings per share can probably be attributed to the influence of Philip Defliese, Chairman of the Subcommittee on Convertible and Participating Securities, and to the opposition of the Securities and Exchange Commission to anti-dilution. Defliese was opposed to including reverse dilution issues ". . . because (a) we are

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<sup>44</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 13. (Mimeographed.)

<sup>45</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Earnings per Share, Opinions of the Accounting Principles Board, No. 15 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 228.

in a peculiar position if we disregard the inherent rights of security issues and the result is an increase in EPS over what that amount would be if such rights had been taken into consideration . . . and (b) we seem to be inconsistent with the position we adopted on pro forma EPS."<sup>46</sup>

Theoretically the purpose of the residual concept was to reflect in earnings per share the capital structure which existed in each period. Under this concept, residual equity included senior securities which derived a major portion of their value from their conversion rights or their common stock characteristics in addition to the common shares outstanding. Securities classified as residual, therefore, could cause earnings per share to increase or decrease. The exclusion from the earnings-per-share computation of residual securities which increased earnings per share clearly weakened the basic concept unless the purpose of the concept was modified.

In a statement defending his position, Defliese made a subtle but important change in the purpose of the residual concept. The purpose of the residual concept was no longer that of allocating earnings to all residual equities. Instead, the objective of the concept was to prevent the employment of residual securities as a substitute for common stock for the purpose of increasing earnings per share. Defliese interpreted the residual concept as follows:

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<sup>46</sup>Letter from Philip L. Defliese, Chairman of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, to members of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants dated April 10, 1968.

. . . The residual concept, in my opinion, is an attempt to prevent a senior form of a security which can obtain a substantial part of its investment attractiveness only because of its common stock characteristics being employed to give the appearance of greater per share earnings than if common stock had actually been issued. Pro forma calculations serve a somewhat related purpose and deal with somewhat similar securities. In fact, the only difference between residual securities and those for which pro forma calculations are called for is one of degree.<sup>47</sup>

The other four members of the Subcommittee continued to prefer the basic residual concept. Accordingly, all of the early drafts of the opinion, including the November 6, 1968 exposure draft, retained the residual classification for securities which increased primary earnings per share. In fact, a provision to prevent reverse dilution of primary earnings per share was not included until the concept of common stock equivalents was introduced in the February 24, 1969 draft.<sup>48</sup>

Opposition by the Securities and Exchange Commission. The opposition of the Securities and Exchange Commission to a residual security concept which could result in the enhancement of primary earnings per share was not surprising. The Commission had just released Securities Act of 1933 Release No. 4910 when the Subcommittee met to discuss the proposed opinion with Commission members on August 1, 1968. One of the conclusions of that release had the effect of modifying the market

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<sup>47</sup>Statement of P. L. Defliese, Chairman of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, to members of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants dated April 23, 1968.

<sup>48</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Draft, Proposed APB Opinion: Earnings per Share, February 24, 1969 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 12. (Mimeographed.)

relationships criterion for determining residual status under APB Opinion No. 9 to include a dilution test. The following statement from the release makes this point clear:

. . . In general, if at the time of issuance of a convertible security in an acquisition, the terms are such as to result in immediate material dilution to pro forma earnings per share, assuming conversion, then that security should be considered a residual security whether or not a majority of its value may be derived from its conversion right.<sup>49</sup>

In the August 1, 1968 meeting between members of the Subcommittee and members of the Commission, the preference of the Commission for the dilution criterion was reaffirmed. In fact, the Commission really preferred only one earnings-per-share figure which would reflect all potential dilution. This is indicated by the following statement:

The view was expressed by L. Millard of the SEC, that dilution of earnings per share should be the basis for determining whether a convertible security is a residual. It was also indicated that the most meaningful earnings per share figure would be that which gave effect to all convertibles as though they were in fact converted (i.e. pro forma earnings per share).<sup>50</sup>

The Commission's attitude did not change with the release of the November 6, 1968 exposure draft which permitted reverse dilution of primary earnings per share. In commenting on the exposure draft Andrew Barr, Chief Accountant of the Securities and Exchange Commission, stated:

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<sup>49</sup>Securities and Exchange Commission, "Securities Act of 1933 Release No. 4910," Financial Analysts Journal, XXIV (September-October, 1968), 68.

<sup>50</sup>Memorandum prepared by Robert N. Sempier, Assistant Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, for the convertible securities file of the Accounting Principles Board of the American Institute of Certified Public Accountants dated August 5, 1968.



In our discussion with members of the subcommittee, and as reflected in Securities Act Release No. 4910, we have made it clear that the Commission's primary concern with the calculations of earnings per share is the dilutive effect of other securities on the earnings per share of the common stock. That is, the proper determination of the earnings per share attributable to the common stock gives effect to participations of other security holders. Securities which do not have a dilutive effect or which would enhance earnings per share, assuming conversion, would not enter into the calculations.<sup>51</sup>

The Accounting Principles Board had hoped that the Securities and Exchange Commission would suspend enforcement of the provisions of Securities Act of 1933 Release No. 4910 in favor of the guidelines set forth in the exposure draft. Barr made it clear that the Commission would not do so in the following statement:

We also believe that guidelines based on the investment value concept, and even the market parity concept, are not adequate to cope with all situations in which dilution is so great as to cause us trouble. While we will not oppose adoption of the proposal, we do not abandon the criterion specified in Securities Act Release 4910 but will apply it only when failure to do so would materially distort the effect of the securities to be issued.<sup>52</sup>

Practically none of the comment letters on the November 6, 1968 exposure draft took exception to the enhancement of primary earnings per share by residual securities. This would be expected since most of the responses came from the top level of management of firms which were likely to be affected adversely by the opinion. Some concern was expressed that the draft conflicted with the Securities and Exchange Commission ruling, as shown by the following excerpt:

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<sup>51</sup>Letter from Andrew Barr, Chief Accountant of the Securities and Exchange Commission, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 7, 1969.

<sup>52</sup>Ibid.

Our second specific difference concerns the possibility of differing rules issued by the American Institute and by the Securities and Exchange Commission. Paragraph 57 of the opinion implies that a security not be regarded as residual merely because of the effect the classification has on primary earnings per share. The SEC has issued a ruling stating that securities should be considered residual if they have a material effect of dilution on earnings per share when issued. Before any opinion is issued by the Institute, we feel that this apparent difference between the AICPA and the SEC rule should be resolved.<sup>53</sup>

A few letters also pointed out the previously discussed inconsistency between primary and fully diluted earnings per share. These respondents usually urged that fully diluted earnings per share should also include securities the conversion or exercise of which would result in an enhancement of the figure. The logic for their inclusion in the computation is expressed in the following quotation:

As we view paragraphs 70 and 72, it appears that inconsistent assumptions are required to be made in the calculation of fully diluted EPS where a company has several classes/types of outstanding convertible securities which are not classed as residuals, only these which will adversely affect EPS are to be included in the calculation. In most instances the fully diluted concept rests upon an assumption that the market price of common stock will increase to the point where conversion is advantageous from the viewpoint of the security holder. Since this is the assumption necessary to give meaning to the fully diluted EPS presentation, it must be assumed consistently, i.e., as to all outstanding convertible issues, if it is not to mislead the investing public altogether. It is not a question of infringing upon the time-honored principle of conservatism--it is simply the logical consequence of adopting the fully diluted concept.<sup>54</sup>

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<sup>53</sup>Letter from J. P. McFarland, President of General Mills, Inc., to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 10, 1969.

<sup>54</sup>Letter from J. Kenneth Kilcarr, President of the Airline Finance and Accounting Conference, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 13, 1969.

Solution under the concept of common stock equivalents. The adoption of the concept of common stock equivalents eliminated the inconsistency in criteria between primary and fully diluted earnings per share. Primary earnings per share excluded those common stock equivalents which would increase earnings per share or decrease loss per share as otherwise computed. The concept also resolved much of the conflict with the Securities and Exchange Commission. There remained, however, the possibility that a security which could result in material potential dilution would not be classified as a common stock equivalent under the guidelines of APB Opinion No. 15. Although such securities would enter into the computation of fully diluted earnings per share, Securities Act of 1933 Release No. 4910 would also require their inclusion in the computation of primary earnings per share. Andrew Barr, Chief Accountant of the Securities and Exchange Commission, did not mention this discrepancy in his comment letter on the pre-ballot draft of March 14, 1969.<sup>55</sup> Perhaps the Commission felt that the guidelines were sufficiently restrictive to prevent this situation from occurring.

Use of Funds from the  
Assumed Exercise of Warrants

Another problem which confronted the Accounting Principles Board under the residual concept was the formulation of guidelines for determining the use of funds derived from the assumed exercise of warrants. The following discussion is concerned primarily with the treasury stock

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<sup>55</sup>Letter from Andrew Barr, Chief Accountant of the Securities and Exchange Commission, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated March 27, 1969.

method and modifications of the treasury stock method which the Board eventually adopted in APB Opinion No. 15. The treasury stock method and other assumptions as to the use of warrant funds are treated more extensively in Chapter 5.

The problem. Warrants had not been considered residual securities under APB Opinion No. 9. They were, however, included in the computation of pro forma earnings per share if their exercise would result in material dilution of future earnings per share. No guidelines for the use of the funds received from the assumed exercise of the warrants were provided in the Opinion. Consequently several different assumptions developed in practice, as indicated by Frank Weston and Sidney Davidson:

. . . In computing supplementary pro forma earnings per share data to determine potential dilution from outstanding options and warrants, it is customary to attribute some increase in pro forma net income as a result of the pro forma use of proceeds--either by an assumed reduction in interest expense (through pro forma payment of debt) or by an increase in investment income, both net of income tax effect. A third approach is to assume that common shares are purchased for the corporate treasury with the proceeds at current market prices, considering only the excess of shares issuable under such instruments over the pro forma shares so acquired as an increase in the pro forma outstanding shares for the dilution computation.<sup>56</sup>

At least two members of the Accounting Principles Board, Weston and Davidson, had reservations about methods of attributing earnings to the proceeds of warrants assumed to have been exercised which resulted in pro forma adjustments of historical net income for the purpose of

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<sup>56</sup>Frank T. Weston and Sidney Davidson, "What Will Accounting Changes Do to Earnings?" Financial Analysts Journal, XXIV (September-October, 1968), 62.

computing primary earnings per share. They expressed these reservations as follows:

. . . However, when options or warrants qualify as residual securities, there exists a major question as to whether the historical net income of the period should be revised in any way, since the residual security computation is the basic, historical computation for the period and should therefore be based on actual net income. Accordingly, any increase in net income resulting from an attribution of earnings to proceeds which have not in fact been received would appear to be improper. On the other hand, it would appear illogical to adjust upward the outstanding common shares by the entire number of shares issuable under options and warrants without some recognition of the fact that these instruments, upon exercise, do result in additional funds being made available to the corporation.<sup>57</sup>

Weston and Davidson concluded that the treasury stock method might be most appropriate because the computation did not require a pro forma adjustment to net income.<sup>58</sup> Although net income is not adjusted in the actual computation of earnings per share under the treasury stock method, the effect on earnings per share is the same as if a perhaps inappropriate earnings rate on warrant proceeds had been assumed for the computation.<sup>59</sup> Proof that the treasury stock method assumes a rate of return on warrant proceeds that varies inversely with the price of the related common stock and that the rate assumed is always less than the earnings-price ratio of the underlying common stock is shown in Chapter 5.

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<sup>57</sup>Ibid.

<sup>58</sup>Ibid.

<sup>59</sup>After further research of the treasury stock method, Weston also reached this conclusion. See a letter from Frank T. Weston, member of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, to J. S. Seidman, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated March 28, 1969.

As Table 24 on page 178 indicates, early drafts of the opinion, including the November 6, 1968 exposure draft, allowed management considerable latitude in selecting a return on the funds obtained from an assumed exercise of warrants. The August, September, and October, 1968 drafts permitted the following assumptions:

1. Consistent with the company's financial policies or, in the absence of a discernible relevant policy,
2. The rate of interest being paid on outstanding debt, net of tax effect,
3. An assumed investment in government or similar obligations, net of tax effect,
4. The assumed use of funds to purchase stock of the issuing company at current prices.<sup>60</sup>

Assumptions prohibited by the November 6, 1968 exposure draft.

The November 6, 1968 exposure draft eliminated the purchase of treasury stock option, substituting in its place the option that funds received from the exercise of warrants would earn at the current borrowing rate of the company, net of tax effect.<sup>61</sup> Furthermore, the treasury stock

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<sup>60</sup>See Accounting Principles Board of the American Institute of Certified Public Accountants, Draft, Proposed APB Opinion: Earnings per Share, August 26, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), pp. 25-26; Accounting Principles Board of the American Institute of Certified Public Accountants, Draft, Proposed APB Opinion: Earnings per Share, September 16, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 29; and Accounting Principles Board of the American Institute of Certified Public Accountants, Lytle-Schuetze Draft, Proposed APB Opinion: Earnings per Share, October 3, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), pp. 49-50.

<sup>61</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 12.

method was not allowed even if it were consistent with the company's financial policies. The Board prohibited its use in the following statement: "An assumed use of funds to purchase stock of the issuing company is not appropriate because of the number of estimates, restrictions, and other factors involved."<sup>62</sup>

Apparently the Accounting Principles Board had become concerned with the legality of a company's purchase of its own stock. In the interest of protecting creditors, some state statutes limit the amount of treasury stock which may be purchased. Bond indentures may also limit the purchase of treasury stock in order to protect the bondholders. The Securities and Exchange Commission also regulates the purchase of treasury stock. For example, Rule 10b-6 of the Securities Exchange Act of 1934 contains restrictions against trading by persons interested in a distribution.<sup>63</sup>

By specifically prohibiting the treasury stock method in the November 6, 1968 exposure draft, the Board appeared to be rejecting the concept of substance over form. Such a position was clearly untenable because the entire concept of residual securities placed substance over form. David N. Judelson and Norman R. Forson, President and Treasurer, respectively, of Gulf + Western Industries, Inc. pointed this out in the following comments:

. . . Also the assumed use of funds to purchase treasury stock

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<sup>62</sup>Ibid.

<sup>63</sup>Securities and Exchange Commission, General Rules and Regulations under the Securities Exchange Act of 1934 as in Effect October 16, 1968 (Washington, D. C.: U.S. Government Printing Office, 1968), pp. 14-15.

is more realistic than the approved methods. The objections to the use of this method set out in the opinion are without substance. The "number of estimates" involved are no greater than under the acceptable uses. The limitations are presumably under loan agreements. We believe that most loan agreements would allow a company to retire stock in a dollar amount equal to the amount of stock sold. The "other factors" might include the problem of purchasing a large block of treasury stock at a fixed market price. This assumption is no harder to accept than the assumption that all warrants and options are exercised at the same time.<sup>64</sup>

The November 6, 1968 exposure draft and all preceding drafts also rejected an assumed rate of return on the use of additional capital for operating purposes. The Accounting Principles Board gave the following reasons:

- a. A historical rate of return on book equity (which under accounting conventions frequently does not reflect the present replacement cost of tangible resources or substantial intangible resources) is not a reliable indication of a return to be expected on additional funds, and
- b. in any event, assumptions as to future returns on the employment of capital in business operations would be conjectural.<sup>65</sup>

Several letters received by the Board in response to the exposure draft contained comments on the fallacy of these arguments. Judelson and Forson pointed out that the argument against a historical rate of return on book equity is an argument against basic principles of accounting. They also felt that ". . . since the entire computation

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<sup>64</sup>Letter from David N. Judelson and Norman R. Forson, President and Treasurer, respectively, of Gulf + Western Industries, Inc. to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 14, 1969.

<sup>65</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per Share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 12. (Mimeographed.)



based on assumed exercise of warrants and options is conjectural, an assumed use of funds might as well be conjectural also."<sup>66</sup>

Corporate executives expressed dissatisfaction with the provision disallowing the assumed investment of warrant proceeds in operating assets. Many felt that the proceeds would be invested in operating assets rather than being used to retire debt or invested in government securities. The following comments are typical:

The assumed uses set out in the proposed opinion . . . are probably the last thing a company which believes in leverage would do. They would probably invest the proceeds in operating assets with an expectation of a higher return on investment.<sup>67</sup>

The most serious defect in the dilution rules is the requirement that proceeds from the exercise of warrants and options must be dealt with as if used to retire debt, or invested in government securities if no debt exists. It is more likely that in nine cases out of ten the proceeds will be reinvested in the business and earn a higher return than the savings in interest on debt. Obviously no rule can recognize all the possible uses of the funds and the earnings they will produce but this does not justify a rule that presumes debt repayment to the exclusion of all other uses. By what authority is the most likely assumption replaced by the least likely?<sup>68</sup>

The proposals for assumed use of funds receivable by the corporations upon the exercise of options or warrants by the holders thereof, strike us as being particularly unrealistic. If holders of such options suspected that the capital they were

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<sup>66</sup>Letter from David N. Judelson and Norman R. Forson, President and Treasurer, respectively, of Gulf + Western Industries, Inc. to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 14, 1969.

<sup>67</sup>Ibid.

<sup>68</sup>Letter from Clyde Skeen, President of Ling-Temco-Vought, Inc., to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 10, 1969.

supplying would be limited to such returns, they would be less than enthusiastic about exercising their options. The unwillingness of the authors to assume future returns on capital on the ground that to do so would be "conjectural," struck us as being inconsistent with other portions of the proposed Opinion in which the authors displayed no reluctance to venture into the world of conjecture.<sup>69</sup>

In its response to the exposure draft, the Securities and Exchange Commission took exception to the assumption that warrant proceeds might be invested in accordance with the company's financial policies. The Commission, in the interest of greater uniformity, preferred the following bases which are listed in the Commission's suggested order of priority:

1. The rate of interest being paid on outstanding debt,
2. An assumed use of funds to purchase stock of the issuing company, or
3. The current borrowing rate of the company but not in excess of one point above the prime rate.<sup>70</sup>

The Commission also stated that ". . . the assumed use of funds to purchase stock is an appropriate basis and that it will produce the most realistic results in many instances."<sup>71</sup>

Adoption of the treasury stock method. Most of the Accounting Principles Board's research with respect to warrants appears to have been conducted after the release of the November 6, 1968 exposure draft.

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<sup>69</sup>Letter from F. Edward Rugemer, Vice-President of Baltimore Gas and Electric Company, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 2, 1969.

<sup>70</sup>Letter from Andrew Barr, Chief Accountant of the Securities and Exchange Commission, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 7, 1969.

<sup>71</sup>Ibid.

One of the reasons for the increased emphasis on warrants was an article entitled "The New Warrant Game" published in The Value Line Warrant Service. A copy of this article was circulated to members of the Subcommittee on Convertible and Participating Securities.<sup>72</sup> The tenor of the article was that warrants were no longer being used just to facilitate the sale of the securities to which they were attached. They were also playing a major role in mergers, acquisitions and corporate distributions.<sup>73</sup>

With the adoption of the concept of common stock equivalents after the November 6, 1968 exposure draft, the Board placed more emphasis on dilution as a criterion for the inclusion of warrants in the primary earnings-per-share computation. This is indicated by the elimination of the requirements that the market price of the related common stock be 125 percent or more of the exercise price of the warrant on the date of issue or 150 percent or more subsequent to date of issue for the warrant to be classified as residual. All options previously allowed management with respect to the assumed use of warrant proceeds were eliminated in favor of the treasury stock method. The elimination of these options assured uniformity in the computation of earnings per share. It did not, however, assure interperiod or intercompany comparability of earnings per share, as will be shown in Chapter 5. In

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<sup>72</sup>Letter from Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, to the members of the APB Subcommittee on Convertible Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated December 16, 1968.

<sup>73</sup>"The New Warrant Game," The Value Line Warrant Service (New York: Arnold Bernhard and Co., Inc., 1968), p. 1.

addition, adoption of the treasury stock method did not assure the recognition, under certain circumstances, of the potential dilution of earnings per share that might be caused by the exercise of warrants. The Board corrected this aspect of the treasury stock method, to a certain extent, in a subsequent draft which is discussed later in this chapter.

The Board's adoption of the treasury stock method under the concept of common stock equivalents after having prohibited its use under the residual concept ". . . because of the number of estimates, restrictions, and other factors involved"<sup>74</sup> required justification. Whereas previously the method had been thought of as a bona-fide repurchase assumption, it was now considered simply as a practical means of computing the dilution caused by warrants. The February 24, 1969 draft explains its use as follows:

. . . The Board recognizes that any assumption of use of funds is hypothetical and that varying results would be obtained depending upon the assumptions made. It has concluded, however, that use of the foregoing method is the most practical means of giving effect to the dilution of earnings per share which results from the issuance of common stock at a price below the current market price.<sup>75</sup>

The principal advantage of the treasury stock method in its initial form as adopted in the February 24, 1969 draft were its simplicity of application and the ready availability of the required data.

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<sup>74</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Exposure Draft, Proposed APB Opinion: Earnings per share, November 6, 1968 (New York: American Institute of Certified Public Accountants, Inc., 1968), p. 12. (Mimeographed.)

<sup>75</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Draft, Proposed APB Opinion: Earnings per Share, February 24, 1969 (New York: American Institute of Certified Public Accountants, 1969), p. 20. (Mimeographed.)

The number of common stock equivalents was determined by dividing the total warrant proceeds by the current market price of the common stock and deducting the results from the number of shares under option. The only information not provided by the warrant agreement was the market price of the common stock. With the possible exception of closely held corporations, common stock prices are readily available. On the other hand, some other methods require the computation of rates of return or warrant prices which in some cases may not be available.

Modifications of the treasury stock method. Unfortunately, the simplicity and ease of calculation provided by the treasury stock method were short-lived. Each subsequent draft contained modifications of the method as the result of additional research and study of problems inherent in the method. The February 24, 1969 draft had specified use of current common stock market prices for both primary and fully diluted earnings per share.<sup>76</sup> This meant that both earnings-per-share figures were always the same insofar as the effect of warrants. In the Subcommittee pre-ballot draft of March 14, 1969 and in the final opinion, the average market price of the common stock was required for the primary earnings-per-share computation. The higher of the average or current market price was specified for the fully diluted computation.<sup>77</sup> This was in line with the Board's concept that primary earnings per share was

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<sup>76</sup>Ibid., pp. 20 and 22.

<sup>77</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Subcommittee Pre-Ballot Draft, Proposed Opinion: Earnings per Share, March 14, 1969 (New York: American Institute of Certified Public Accountants, Inc., 1969), pp. 19 and 22. (Mimeographed.)

historical in nature whereas fully diluted earnings per share was prospective and designed to show the maximum potential dilution of current earnings per share.

Another problem overlooked in the formulation of the treasury stock method was that some warrant agreements permit the tendering of debt or preferred stock, usually at face or par value, in lieu of cash as satisfaction of the exercise price. Some warrant agreements also require warrant proceeds to be applied toward the retirement of debt. The Subcommittee ballot draft of April 2, 1969 included exceptions to the treasury stock method for these situations. If the market value of debt which might be tendered at its face value was less than its face value, warrant proceeds were assumed to be applied to the retirement of the debt. If the market value of the debt exceeded its face value, the treasury stock method was required. These same assumptions also applied to preferred stock which might be tendered in lieu of cash. The treasury stock method was also inapplicable if the warrant agreement required that proceeds be applied to the retirement of debt. In such cases, the earnings-per-share computations were required to reflect the assumption that debt was retired with the proceeds.<sup>78</sup>

Another problem inherent in the treasury stock method was the fact that it would not indicate potential dilution when the exercise price of the warrants was above the market price of the underlying common

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<sup>78</sup> Accounting Principles Board of the American Institute of Certified Public Accountants, Subcommittee Ballot Draft, Proposed Opinion: Earnings per Share, April 2, 1969 (New York: American Institute of Certified Public Accountants, Inc., 1969), pp. 21-22. (Mimeographed.)

stock. The analysis of warrant characteristics in Chapter 3, however, indicates that, except in the time span immediately prior to the expiration date of the warrants, the relationship between the exercise price of the warrants and the market price of the common stock has little or no bearing on the number of warrants that will ultimately be exercised. The exercise price must be below the market price of the common stock during only a brief period prior to expiration for the warrants to be exercised.

Frank Weston and Emmett S. Harrington recognized the limitations of the treasury stock method in reflecting potential dilution under certain conditions. Weston concluded that, when a large number of warrants was outstanding in relation to the common shares outstanding, the assumption that the company could purchase those shares at current market prices when most of the shareholders had just acquired the shares through warrants exercised at less than market was unrealistic.<sup>79</sup> Harrington agreed with Weston that the treasury stock method did not always properly reflect the dilutive effect of warrants. This is indicated by the following comments on the pre-ballot draft of March 14, 1969:

The present draft does not deal with warrants in a manner which properly indicates the dilutive effect. Frank Weston's analysis . . . clearly indicates that the treasury stock method is not effective for this purpose, particularly at the time of issuance. The deficiencies in this method are glaring when the

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<sup>79</sup>Letter from Frank T. Weston, member of the Subcommittee on Convertible and Participating Securities of the Accounting Principles Board of the American Institute of Certified Public Accountants, to J. S. Seidman, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated March 28, 1969.

number of warrants is very high in relation to the shares of common stocks outstanding.<sup>80</sup>

Harrington offered three alternatives to overcome the limitations of the treasury stock method. The first of these is as follows:

One alternative would be to call for the earnings per share to reflect the greater dilution which would result from the use of funds (a) for the purchase of common stock (the treasury stock method), or (b) to produce a yield at either a specific rate of interest or a flexible rate based on the current bank prime interest rate.<sup>81</sup>

A second alternative offered by Harrington was the Graham-Dodd method. Under this method the number of common stock equivalents is determined by multiplying the ratio of the market value of the warrant to the market value of the common stock by the number of shares obtainable from exercise.<sup>82</sup> This method produces dilution equal to or greater than the treasury stock method in all possible cases. An advantage is that it will produce dilution when the exercise price of the warrant is above the market price of the common stock. A disadvantage is that the market price of the warrant is required for the computation. This method is more fully analyzed in Chapter 5.

Harrington's third alternative was ". . . to retain the treasury stock method, but to require supplemental disclosure indicating the dilution which would occur at various levels of market prices for common stock."<sup>83</sup> Harrington did not favor this method because it conflicted

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<sup>80</sup>Letter from Emmett S. Harrington, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, to Philip L. Defliese, member of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated March 28, 1969.

<sup>81</sup>Ibid.

<sup>82</sup>Ibid.

<sup>83</sup>Ibid.



with the dual equal prominence presentation of primary and fully diluted earnings per share.

The Board adopted a modification of Harrington's first alternative as a solution to the inadequacy of the treasury stock method to reflect dilution under certain circumstances. This last-minute change first appeared in the ballot draft of April 21, 1969 and became known as the 20 percent limitation. When the number of shares of common stock obtainable from the exercise of warrants exceeded 20 percent of the current common shares outstanding, the use of proceeds was computed in two steps as follows:

- a. As if the funds obtained were applied to the repurchase of 20% of the current outstanding common shares at the average market price during the period (treasury stock method); and then
- b. As if the balance of funds were applied first to reduce any short-term or long-term borrowings and any remaining funds were invested in long-term government securities or commercial paper, with appropriate recognition of any income tax effect.

The results of steps (a) and (b) of the computation (whether dilutive or anti-dilutive) should be aggregated and, if the net effect is dilutive, should enter into the earnings per share computation.<sup>84</sup>

The 20 percent limitation also applied to the fully diluted earnings-per-share computation with the modification that treasury stock was assumed to be purchased at the higher of the average price or the current price.<sup>85</sup> The same provisions were retained in the final opinion.<sup>86</sup>

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<sup>84</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Ballot Draft, Proposed Opinion: Earnings per Share, April 21, 1969 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 23. (Mimeographed.)

<sup>85</sup>*Ibid.*, p. 25.

<sup>86</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Earnings per Share, Opinions of the Accounting Principles Board, No. 15 (New York: American Institute of Certified Public Accountants, Inc., 1969), pp. 232-235.

The 20 percent limitation had the desired effect of making the earnings-per-share computation more dilutive, as shown in the following two hypothetical cases.

|  | <u>Case 1</u>      | <u>Case 2</u>      |
|--|--------------------|--------------------|
| Assumptions:   |                    |                    |
| Net income for period  | \$1,000,000        | \$1,000,000        |
| Common shares outstanding  | 1,000,000          | 1,000,000          |
| Number of shares subject to purchase through exercise of warrants                | 500,000            | 500,000            |
| 20% limitation on assumed purchase   | 200,000            | 200,000            |
| Exercise price per share   | \$10               | \$10               |
| Average and end-of-period market value per common share                          | \$8                | \$30               |
| Computations:  |                    |                    |
| Application of assumed proceeds (\$5,000,000) towards purchase of treasury stock | \$1,600,000        | \$5,000,000        |
| Reduction of 6% debt   | <u>3,400,000</u>   | <u>--</u>          |
|  | <u>\$5,000,000</u> | <u>\$5,000,000</u> |
| Adjustment of net income:  |                    |                    |
| Actual net income  | \$1,000,000        | \$1,000,000        |
| Interest reduction net of tax effect (3%)  | <u>102,000</u>     | <u>--</u>          |
| Adjusted net income  | <u>\$1,102,000</u> | <u>\$1,000,000</u> |
| Adjustment of shares outstanding:  |                    |                    |
| Actual   | 1,000,000          | 1,000,000          |
| Additional shares issuable   |                    |                    |
| Case 1 (500,000 - 200,000)   | 300,000            | --                 |
| Case 2 (500,000 - $\frac{\$5,000,000}{\$30}$ )                                   |                    |                    |
| 500,000 - 166,667)   | --                 | 333,333            |
| Adjusted shares outstanding  | <u>1,300,000</u>   | <u>1,333,333</u>   |
| Earnings per share:  |                    |                    |
| Before adjustment  | \$1.00             | \$1.00             |
| After adjustment   | \$0.845            | \$0.75             |

The assumptions in both cases are the same, except that in Case 1 the exercise price of the warrants is below the market price of the

common stock. In Case 2 the market price of the common stock is high in relation to the exercise price of the warrants. In both cases the ratio of the shares under option to the shares outstanding is high so that the 20 percent limitation applies.

In Case 1 application of the treasury stock method without the 20 percent limitation would have resulted in no dilution because the exercise price of the warrants was above the market price of the common stock. Case 2 demonstrates a situation in which the 20 percent test is met but the number of shares purchased under the treasury stock method is less than the 20 percent limitation. Such results will occur when the market price of the common stock is high relative to the exercise price of the warrant.

Case 2 also illustrates the sensitivity of earnings per share to the market price of the common stock. For example, if the market price of the common had been \$50 per share rather than \$30, earnings per share would have been approximately 71 cents. Proof is presented in Chapter 5 that under these conditions the effect of the treasury stock method on earnings per share is the same as if the assumption were made that the proceeds from warrants earned less than 2 percent, the earnings-price ratio based on actual common shares outstanding. In other words, the company's rate of return on assets is less than its cost of debt, a highly unlikely possibility for a company with a price-earnings ratio of 50. These characteristics of the treasury stock method are factors which must be evaluated in formulating guidelines for the earnings-per-share computations of companies with warrants outstanding.

## SUMMARY AND CONCLUSIONS

During the 1960's the use of convertible securities and warrants increased substantially. The conversion feature facilitated the issuing of debt and equity securities by allowing investors to participate in the growth of the issuer through the option for the issuer's common stock. The issuer benefited through lower interest and dividends. The Accounting Principles Board was particularly concerned with the increase in the use of convertible preferred stock in mergers and acquisitions. Convertible preferred stock was used to permit the stockholders of the acquired company to participate in the long-range potential of the acquiring company. This potential of the convertible preferred stockholders, however, was not reflected in earnings per share. Many companies, therefore, were able to reflect a temporary improvement in earnings per share through such acquisitions.

The Accounting Principles Board concluded that under these circumstances the traditional earnings per share computation was inappropriate. As a result, in December, 1966, the Board released APB Opinion No. 9 which contained a development of the concept of residual securities. A residual security was one which clearly derived a major portion of its value from its conversion rights or its common stock characteristics. Such securities were to be treated as common stock for purposes of the earnings-per-share computation. The criterion for determining residual status was one of relative values--the investment value of a convertible security compared to its total value. Consequently, under the appropriate circumstances, residual securities could increase earnings per share. APB Opinion No. 9 also required a pro forma

earnings-per-share computation if existing contingencies permitting the issuance of common shares in the future would materially dilute earnings per share. The use of different criteria, relative values and dilution, resulted in a potential conflict between the two earnings-per-share computations which was eventually resolved under the concept of common stock equivalents by eliminating common stock equivalents which enhanced earnings per share.

APB Opinion No. 9 contained no specific guidelines for determining the residual status of securities. The result was a lack of uniformity in computing earnings per share. In addition, warrants were generally not considered to be residual securities by practitioners. Consequently, by 1968 warrants were being used in mergers and acquisitions as a means of avoiding the detrimental effect on earnings per share caused by convertible securities which were classified as residual. For these reasons, the Accounting Principles Board undertook a revision of APB Opinion No. 9.

In its early efforts the Board retained the residual concept. The emphasis was, therefore, on formulating guidelines for determining residual status in conformity with the residual concept as expressed in APB Opinion No. 9. These guidelines, circulated in the exposure draft of November 6, 1968, produced an unprecedented negative response from the financial community. As a result, the Board made such extensive changes in the guidelines that they no longer conformed to the basic tenets of the residual concept. The term residual was subsequently dropped in favor of the term common stock equivalents and the modified residual concept became the concept of common stock equivalents.

The basic difficulty the Board encountered in making the theory of the residual concept operational was the fact that a security could change residual status between periods as a result of market relationships. Under the residual theory the changes in equity capital caused by securities moving in and out of residual status were real and earnings per share should reflect these changes in equity capital without retroactive adjustment to earnings per share. Most of the financial community felt that reflecting these changes, which were the result of investment and market values over which management had no direct control, destroyed the interperiod and intercompany comparability of earnings per share. The Board resolved this difficulty to some extent with the adoption of the concept of common stock equivalents. Under this concept convertible securities were classified as common stock equivalents only if they met the yield test on the date of issue.

Warrants were always classified as common stock equivalents; however, they did not enter into the earnings per share computations under the treasury stock method unless: (1) the market price of the related common stock was greater than the exercise price of the warrants or (2) the 20 percent test was met and the aggregate results were dilutive. Earnings per share computations of companies with warrants outstanding remained a partial function of market values. Further, the relationship was inverse: the higher the market price of the common stock, the lower the earnings per share. The Board continued to prohibit retroactive adjustment of earnings per share although the number of common stock equivalents could be expected to change from period to period because of changes in market prices. Despite these conclusions, the fact is that

the number of shares under option and the funds that would be received from exercise remain constant. Clearly the results produced by the treasury stock method in any given period would agree with the results when warrants are actually exercised only if the company actually purchased treasury stock with warrant proceeds and the price of the common stock did not change. This aspect of the treasury stock method needs to be considered in formulating earnings-per-share guidelines.

Under the residual concept, the purpose of including residual securities in earnings-per-share computations was to reflect changes in the residual capital of a company in the per-share figures. Securities meeting the relative value test were residual and therefore a part of the common equity. Under the appropriate circumstances, a residual security could cause an increase in traditionally computed earnings per share. The relative value criterion for classifying securities as residual, therefore, placed the Accounting Principles Board in direct conflict with the Securities and Exchange Commission, which favored potential dilution as the criterion. In fact, the Commission had issued a release that required securities which would result in material potential dilution of earnings per share at issue to be classified as residual even if the relative value test of APB Opinion No. 9 was not met. The Commission declined to suspend the dilution test and, under the concept of common stock equivalents, the Board excluded from the computation securities classified as common stock equivalents which would have the effect of increasing earnings per share as otherwise computed. Abandonment of the residual concept permitted a more realistic definition of the purpose of including securities other than common stock in the earnings-per-share

computations. Under the concept of common stock equivalents the purpose was to prevent a senior form of security which obtained a substantial part of its investment attractiveness because of its common stock characteristics from being employed to give the appearance of greater per share earnings than if common stock had actually been issued.

The inclusion of warrants as common stock equivalents presented the Board with a unique problem. Unlike convertible securities, which generally do not require the payment of additional cash upon conversion, the exercise of warrants usually requires payment in cash. Unlike debt, the proceeds of which are frequently committed to specific purposes by the indenture, warrant agreements rarely require warrant proceeds to be used for specific purposes. Management is therefore free to use these funds for any legitimate corporate purpose.

The manner in which these funds are used clearly affects earnings per share. Under the residual concept, the Board appeared to accept this conclusion by permitting the assumption that the funds were invested consistent with the company's financial policies. The scope of this provision was severely limited, however, by prohibition of the assumption that the proceeds would be invested in operating assets. The Board also disallowed the assumption that proceeds would be invested in treasury stock, after having approved this method in early drafts.

The Securities and Exchange Commission was opposed to the assumption that funds could be invested in accordance with the company's financial policies. Perhaps as a result of this opposition and in the interests of greater uniformity, the Board did a complete about face and adopted the treasury stock method under the concept of common stock



equivalents. The method, however was not to be construed as a literal repurchase assumption, but merely as a practical means of computing the dilution of earnings per share caused by warrants. The principal advantage of the method was its simplicity. There is ample evidence, however, that the Accounting Principles Board adopted the treasury stock method without having fully considered its effect on earnings per share under various operating conditions. After adoption of the treasury stock method under the concept of common stock equivalents in the draft of February 24, 1969, each subsequent draft of the proposed opinion contained modifications of the method. These modifications included:

1. Use of the average market price of common stock rather than the current market price for primary earnings per share and the use of the higher of average or current market prices for fully diluted earnings per share.
2. Exclusion of warrants which permitted the tendering of debt or preferred stock in lieu of cash and warrants which required that proceeds be applied to debt retirement.
3. The 20 percent limitation designed to produce greater dilution of earnings per share when large numbers of warrants are outstanding and the ratio of the market price of the common stock to the exercise price of the warrants is low.

The introduction of these modifications destroyed the treasury stock method's principal advantage of simplicity and did little to correct its shortcomings. Earnings per share continued to be a partial function of the market price of the company's common stock with an inevitable adverse effect on the comparability of interperiod and

intercompany earnings per share. The earnings rate attributed to warrant proceeds by this method decreases as the price of the company's common stock increases. Companies with high price-earnings ratios are assumed to be unable to invest funds as advantageously as companies with low price-earnings ratios. In formulating guidelines for the earnings-per-share computations of companies with warrants outstanding, consideration must be given to the question of whether the assumptions of the treasury stock method result in an appropriate rate of return on warrant proceeds.

Chapter 5 is concerned with the formulation of guidelines for computing earnings per share of companies with warrants outstanding. These guidelines will be derived from: (1) the attributes of earnings per share which investors appear to use as developed in Chapter 2, (2) the characteristics of warrants which need to be considered in earnings-per-share computations as analyzed in Chapter 3, and (3) the analysis in this chapter of the difficulties encountered by the Accounting Principles Board in the development of the concept of common stock equivalents. Various assumptions about the use of warrant proceeds will be analyzed in terms of these guidelines to determine the most suitable method of computing earnings per share of companies with warrants outstanding.

## Chapter 5

### THE FORMULATION OF GUIDELINES FOR COMPUTING EARNINGS PER SHARE OF COMPANIES WITH WARRANTS OUTSTANDING

In the preceding chapters of this study, a number of observations about earnings per share, warrants, and the concept of common stock equivalents has been made. The purpose of these observations was to provide information relevant to the formulation of guidelines for computing earnings per share of companies with warrants outstanding. A summary of these observations is presented in the first section of this chapter in order to provide a convenient reference for use in the development of guidelines for computing earnings per share of companies with outstanding warrants.

In formulating guidelines for computing earnings per share of companies with warrants outstanding, two basic questions need to be answered:

1. Should the effect of warrants enter into both primary and fully diluted earnings per share?<sup>1</sup>
2. In reflecting the dilutive effect of warrants in earnings per share, what rate of return should be assumed on the proceeds from exercised warrants?

The question of whether the effect of warrants should be included in all earnings-per-share computations is considered in the second

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<sup>1</sup>For convenience, the terminology of APB Opinion No. 15 has been adopted.

section of this chapter. The rate of return on warrant proceeds is investigated within the context of the development of guidelines for computing fully diluted earnings per share in the next section. At this point, the various methods of computing fully diluted earnings per share are tested against the guidelines. Finally, the recommended method of computing fully diluted earnings per share, based on the guidelines developed within this study, is presented.

#### SUMMARY OF OBSERVATIONS IN REGARD TO EARNINGS PER SHARE, WARRANTS, AND THE CONCEPT OF COMMON STOCK EQUIVALENTS

Several important points were developed in Chapters 2, 3, and 4 with regard to earnings per share, warrants, and the concept of common stock equivalents. These observations are used in the remaining sections of this chapter to formulate guidelines for the computation of earnings per share of companies with warrants outstanding.

1. The purpose of earnings per share is to attribute the earnings of a corporate entity to the capitalization structure of the entity existing during that period. By relating earnings per share to price per share, comparisons among corporations with different capital structures, as well as interperiod comparisons of the same company, can be made. Additionally, the relationship of earnings per share to dividends per share provides information about the entity's dividend policy.

2. Many common stock valuation models employ earnings per share historically and/or prospectively, explicitly or implicitly, as a basic variable. Historical earnings-per-share data are sometimes used as the basis for predicting future earnings per share and/or, by application

of a dividend payout ratio, future dividends per share. The trend and variability of the trend of past earnings per share are qualitative factors which influence the earnings multiple or capitalization rate which is applied to historical or prospective earnings per share in arriving at stock values. Therefore the timing of the recognition of the dilution, if any, to earnings per share caused by warrants will affect the absolute amount, the trend, and the variability of earnings per share.

3. Dividends are paid on the basis of legal common shares outstanding on the date of declaration of the dividend. Earnings per average common share is therefore a useful statistic for evaluating dividend policy.

4. Most warrants are issued: (1) as a unit with other securities for cash or (2) as a unit with other securities as part consideration for the securities of another corporation. The primary reason for issuing warrants, therefore, is not to raise equity capital but to make the issue of securities to which the warrants are attached more attractive to potential investors by adding value to the security package. This added value is reflected in lower interest or dividend rates and in the higher value received from the sale of the security package. Since these benefits are reflected in the financial statements from the date of issue of the security package, management should also be held accountable for the detriments of attaching warrants to other securities; namely, the potential dilution of a current stockholder's equity if the warrants are exercised. The fact remains that warrants, although attached to other securities for the purpose of making the issue more

attractive, will result in additional equity capital if the warrants are exercised. Furthermore, management has very little control over the timing of these cash inflows resulting from the exercise of warrants.

5. Warrants are not purchased by investors for the purpose of acquiring common equity. Purchasing warrants for this purpose would be irrational because warrants normally sell at a premium above their intrinsic value and are purchased for the leverage they offer an investor. Successful leverage depends upon the high volatility of underlying common stock prices. The volatility of the common stock prices of most companies with warrants outstanding is greater than that of the average listed company.

6. Many warrant issues expire without a substantial number of warrants having been exercised. The conversion of most warrants that are exercised generally occurs in the period immediately preceding the expiration date of the issue. Practically all warrants will be exercised if the market price of the underlying common stock exceeds the exercise price of the warrants during this period. If the exercise price exceeds the common stock price during this period, the issue will expire with very few warrants having been exercised. As a consequence, partial exercise of warrant issues occurs infrequently.

7. Additional equity capital equal to the exercise price of each warrant converted is received when warrants are exercised. Warrant agreements, unlike long-term debt indentures, rarely require that warrant proceeds be used for specific purposes. Management, therefore, has the discretion to use these funds for any legitimate corporate purpose. The effect of the exercise of warrants on earnings per share is

a function of the relationship between: (1) the number of shares of common stock outstanding and the earnings attributable to assets existing prior to the exercise of warrants and (2) the number of common shares issued through the exercise of warrants and the earnings attributable to the warrant proceeds. Dilution to earnings per share will occur when the percentage of increase in earnings attributable to warrant proceeds is less than the percentage of increase in shares outstanding attributable to the exercise of warrants.

8. The time horizon of the average investor appear to be within the range of from one to three years. The median life span of the warrant issues included in this study is 10 years.

9. The concept of substance over form and approximation are accepted by accountants in order to provide timely information which reflects the economic realities of an event. Earnings-per-share computations, therefore, may include: (1) potentially issuable common shares as well as the legally outstanding common shares and (2) estimates of the earnings from the proceeds of warrants assumed to be exercised.

MODIFICATION OF THE CONCEPT OF COMMON STOCK  
EQUIVALENTS UNDER APB OPINION NO. 15 TO  
EXCLUDE THE EFFECT OF WARRANTS FROM  
PRIMARY EARNINGS PER SHARE<sup>2</sup>

Under APB Opinion No. 15 warrants are always common stock

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<sup>2</sup>The elimination of warrants as common stock equivalents reduces primary earnings per share to earnings per average common share assuming no other common stock equivalents, such as convertible securities, are present. The validity of including these other common stock equivalents in primary earnings per share is a question beyond the scope of this study. Primary earnings per share which excludes warrants from common stock equivalents will be referred to as earnings per average common share in this chapter in order to simplify the terminology.

equivalents which enter into the computation of both primary and fully diluted earnings per share if the effect is dilutive. The inclusion of warrants in primary earnings per share is questionable since the result reflects neither the imminence nor likelihood of exercise of the warrants. In addition, the inclusion of essentially the same number of common stock equivalents resulting from warrants in both earnings-per-share figures is questionable because it denies the user an estimate of the total potential dilution which might result from the exercise of warrants. These questions are examined in this section. First, the provisions of APB Opinion No. 15 with respect to warrants are analyzed. Second, a modification to overcome the weaknesses of APB Opinion No. 15 is proposed. Finally factors supporting the proposed modification are discussed.

Requirements of APB Opinion No. 15  
with Respect to Warrants

Under the concept of common stock equivalents, two types of earnings-per-share data for corporations with complex capital structures are required:

1. Primary earnings per share which is based on: (1) the average common shares outstanding and (2) the average common stock equivalents outstanding which have a dilutive effect.
2. Fully diluted earnings per share which is based on: (1) average common shares outstanding and (2) the average shares which would have resulted from all contingent issues that would individually have reduced earnings per share had such shares been issued at the beginning of the period or at the date of issue of the security giving rise to the contingency.<sup>3</sup>

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<sup>3</sup>An exception to this statement occurs under the 20 percent limitation. If the number of shares potentially issuable through the exercise of warrants is greater than 20 percent of the outstanding



The purpose of requiring the inclusion of common stock equivalents in primary earnings per share is to prevent the senior form of a security which appeals to an investor primarily because of its potential share in common stock appreciation being employed to give the appearance of greater earnings per share than if common stock had actually been issued. The same purpose is served by requiring that all securities which contain a provision for the contingent issuance of common shares and have a dilutive effect be included in fully diluted earnings per share.

The difference between the two per-share figures is merely one of degree. In the case of convertible securities this difference between primary and fully diluted earnings per share can be material because the criterion for determining common stock equivalents excludes those convertible securities for which the cash yield is two-thirds or more of the prime rate on the date of issue. Companies that wish to avoid having convertible securities classified as common stock equivalents can do so through the terms of the issue by using appropriate interest or dividend rates and conversion ratios.

The potential for difference between primary and fully diluted earnings per share is much less in the case of warrants. Since warrants are always common stock equivalents, the same issues will usually be included in both primary and fully diluted earnings per share. The number of common stock equivalents entering into the fully diluted computation may be slightly more, however, due to differences in the computational

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common shares, warrant issues which would not currently be dilutive to earnings per share under the treasury stock method may be included in the computation.

guidelines for the two per-share figures. In computing the number of common stock equivalents to be included in primary earnings per share, the average price of common stock for the period is used. For purposes of computing fully diluted earnings per share, the higher of the average price or the current price is required. These same common stock price guidelines also apply to the treasury stock assumed to be purchased under the 20 percent limitation.

In the case of convertible securities, management can avoid the common stock equivalent classification by the terms of the issue, but common stock equivalents cannot be avoided in a warrant agreement. At best, management can only postpone showing the dilutive effect of warrants in earnings per share. Postponement of the dilutive effect can be accomplished by setting the exercise price of the warrants at a level which is high in relation to the market price of the common stock on the date of issue. Even this strategy may fail, however, if the number of warrants issued is greater than 20 percent of the common shares outstanding. Under the 20 percent limitation, funds assumed to be derived from the exercise of warrants are first applied to the purchase of treasury shares to the extent of 20 percent of the common shares outstanding. Any remaining funds are then assumed to be used for the reduction of debt and/or investment in government or commercial securities. If the aggregate effect is dilutive to earnings per share as otherwise computed, then the results enter into the earnings-per-share computation. As shown in Chapter 4,<sup>4</sup> the 20 percent limitation can cause

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<sup>4</sup>See page 213.

dilution of earnings per share even if the exercise price is higher than the market price of the common stock.

Deficiencies of APB Opinion No. 15  
and Proposed Modification

In formulating guidelines for the earnings-per-share computations of companies with warrants outstanding, consideration must be given to the question of whether the best interests of investors are being served by presenting them with two earnings-per-share figures that are sometimes identical and frequently similar. As the preceding discussion has indicated, the effect of warrants on primary and fully diluted earnings per share is identical unless the end-of-the-period price of the related common stock is higher than the average price for the period. If this situation exists, then fully diluted earnings per share will be lower than primary earnings per share and the magnitude of the difference in earnings per share will be directly related to the magnitude of the difference between the average price and ending price of the common stock.

Does this difference, when it occurs, provide any significant new information to the investor? The knowledge that warrants are outstanding which might be dilutive is imparted to the investor by either of the figures; therefore two figures are not necessary for this purpose.<sup>5</sup> As a matter of fact, by including essentially the same dilutive effect of

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<sup>5</sup>The only exception to this statement occurs when the average price of the underlying common stock is lower than the exercise price of the warrants and the end-of-period price of the common stock is higher than the exercise price of the warrants. Under these circumstances warrants would enter into the fully diluted earnings-per-share computation but not the primary earnings-per-share computation.

warrants in both primary and fully diluted earnings per share, important information is being withheld from the user of earnings-per-share data. The impact of the dilutive effect of warrants is lost because the user is provided no basis for comparison. This situation is compounded if the reporting company has dilutive convertible securities outstanding which are not classified as common stock equivalents. The inclusion of the dilutive effect of these securities in fully diluted earnings per share is likely to completely obscure any additional dilution attributable to warrants.

Ideally, the potentially dilutive effect of warrants on earnings per share can best be shown by presenting two earnings-per-share figures--one assuming no dilution and the other assuming full dilution. These two contrasting figures provide the user of earnings-per-share information with the best and worst possible outcomes which might result from the outstanding warrants. Further, potential dilution from warrants is forcefully brought to the attention of the reader of the financial statements through a comparison of the two earnings-per-share figures.

Factors Supporting the Exclusion  
of Warrants from Primary  
Earnings per Share

A number of factors enters into the decision to exclude the potential dilution of warrants from primary earnings per share. The timing of the exercise of warrants, the fact that many warrant issues expire without exercise, and the fact that few warrant issues are partially exercised are warrant characteristics which influence the decision. The dividend

payout ratio is also more meaningful if it is based on earnings per common share. Each of these factors, as well as selected comments of corporate executives and committees of various financial and accounting organizations, is discussed in this section. Elimination of the dilutive effect of warrants from primary earnings per share depends upon the accounting and financial community's acceptance of the dual, equal prominence concept of APB Opinion No. 15. This acceptance, particularly in relation to managements' emphasis on price-earnings ratios, is also discussed in this section.

Warrant characteristics. The analysis of warrant characteristics in Chapter 3, as summarized by Observation No. 6 on page 225 of this chapter, supports the argument that two earnings-per-share figures, one assuming no dilution and the other assuming full dilution, are desirable for companies with warrants outstanding. The evidence, as presented in Table 22 on page 150 of Chapter 3 is two-fold:

1. Warrants are not exercised until shortly before their expiration date unless other factors contained in the warrant agreement induce early exercise.<sup>6</sup> Table 22 indicates that the median cumulative percentage of warrants exercised from the 20 issues was only 1.8 percent by the end of the period immediately preceding the period of expiration. Although the median life span of the warrants included in this study is 10 years,<sup>7</sup> the average investor's time horizon appears to be from one to

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<sup>6</sup>For a discussion of these factors, see pages 151-153.

<sup>7</sup>See Table 10, page 126.

three years (Observation No. 8, page 226).<sup>8</sup> Under these circumstances the average investor would not be concerned with the effect on earnings per share of the dilution caused by the exercise of warrants unless his time horizon included the expiration date of the warrants.<sup>9</sup> During other periods the earnings per average common share which is computed under the assumption that there is no dilution would appear to be as appropriate for investment analysis purposes as the earnings per share which is computed under the assumption that there is full dilution.

2. Many warrants expire without being exercised. As indicated by Table 22, the median percentage of warrants exercised from the 20 issues was approximately 59 percent. The percentage of warrants exercised for six issues was less than 1 percent. On the other hand, the percentage of warrants exercised for seven issues was 95 percent or more. Only one issue had a percentage of exercise which fell in the range from 20 percent to 80 percent. These statistics emphasize the importance of providing an investor with earnings-per-share figures

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<sup>8</sup>See page 52.

<sup>9</sup>This statement implies that potential dilution in the market price of the common stock being evaluated is not reflected until the expiration date of the warrants approaches. Alternatively, it implies that the investor adjusts the earnings multiple or discount factor used in his evaluation of the stock to reflect the market's discount of the potential dilution. Lerner and Auster have concluded that the market does discount potential dilution. Their conclusion, however, applies primarily to the potential dilution resulting from convertible securities. In addition, their study is not addressed to the question of the timing of the recognition of the potential dilution. See Eugene M. Lerner and Rolf Auster, "Does the Market Discount Potential Dilution?" Financial Analysts Journal, XXV (July-August, 1969), 118-121.

which assume no dilution as well as those which assume full dilution. The investor is then in a position to make his own assessment as to the probability that the outstanding warrants will be exercised and the effect that the exercise or non-exercise of these warrants will have on earnings per share and the common stock price. Such information is denied the investor under the provisions of APB Opinion No. 15.

Dividend policy. The analysis of common stock valuation techniques in Chapter 2 (summarized in Observation Nos. 2 and 3 on pages 223-224) disclosed several methods which employ estimates of dividends per share. A common practice is to base such estimates on estimated earnings per share and dividend payout ratios.<sup>10</sup> In such situations earnings per common share assuming no dilution would be a useful tool to the investor because: (1) dividends are paid on the basis of actual shares outstanding and (2) warrants are rarely exercised (and therefore do not become outstanding shares) until the period of their expiration.

The importance of providing investors with earnings per common share assuming no dilution is demonstrated by the seemingly illogical earnings-per-share statistics resulting from the application of APB Opinion No. 15 to certain real estate investment trusts. A number of these trusts, in their initial offering to the public, attached a warrant to purchase one share of beneficial interest to each share sold. In order to qualify for favorable tax treatment, these trusts must distribute at least 90 percent of their ordinary income to their

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<sup>10</sup>See pages 61-64.

shareholders. As a result of these circumstances, annual dividend payments per share are likely to be higher than earnings per share when the warrants become common stock equivalents as provided by APB Opinion No. 15.<sup>11</sup>

Two examples from the many examples available should be sufficient to illustrate this aspect of APB Opinion No. 15. American Fletcher Mortgage Investors is a Massachusetts business trust which qualifies as a real estate investment trust for tax purposes. On January 27, 1970 the trust offered for sale at \$25 per unit 540,000 units consisting of one share of common stock and a five-year warrant to purchase one share of common stock at \$25 per share. In its first year of operation the trust's primary earnings per share was \$2.40 and fully diluted earnings per share was \$2.17. However, dividends of \$2.51 per share were paid in order for the trust to retain its favorable tax status.

C. I. Mortgage Group is another Massachusetts business trust which qualifies as a real estate investment trust for tax purposes. For the fiscal year ending October 31, 1972 it had primary earnings per share of \$2.29 and fully diluted earnings per share of \$1.80. Dividends during the same period were \$2.63 per share.

The prohibition of the presentation of earnings per average common share outstanding by APB Opinion No. 15 does a disservice to investors of these trusts who desire to evaluate the trusts' dividend policies or

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<sup>11</sup>See pages 85-86 for a discussion of the characteristics of real estate investment trusts.



to estimate future dividends based on earnings per share. Neither primary nor fully diluted earnings per share bears any relation to present dividends or those that will be payable in the immediate future because such dividends will be paid on the basis of actual shares outstanding in each period. Although these examples are extreme due to the unusual tax status of real estate investment trusts, the principle remains the same for companies in other industries. This deficiency in the methods promulgated in APB Opinion No. 15 was recognized by Robert L. Forsberg, Vice President--Finance and Treasurer of Arizona Public Service Company in a comment letter to the Institute. In opposing the substitution of primary earnings per share for earnings per average common share, he stated:

One of the criteria used in an investment decision is the dividend pay-out ratio. This is different with different industries. By introducing a primary earnings per share statistic, the dividend pay-out ratio would change and could possible [sic.] create a wrong interpretation when the ratio of one company is compared with that of a different company. This could also be true in the pay-out ratio of one industry against another.<sup>12</sup>

Opinion of major accounting and financial organizations and corporate executives. As indicated in Table 25 on pages 180 and 181 of Chapter 4, most of the major accounting and finance organizations that responded to the November 6, 1968 exposure draft were opposed to the residual security concept and, by implication, to the common stock equivalency concept as they related to primary earnings per share. The

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<sup>12</sup>Letter from Robert L. Fosberg, Vice President--Finance and Treasurer of Arizona Public Service Company, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 10, 1969.

comment letters of these organizations indicated a preference for two earnings-per-share figures--one assuming no dilution and one assuming full dilution. The opposition to an earnings-per-share statistic which included residual securities or common stock equivalents as well as common shares was directed toward the arbitrary nature of the criteria for determining which securities were residual or common stock equivalents. The concern of this segment of the financial community was that the residual concept would ". . . in the eyes of investors, infuse such artificiality, complexity and confusion into earnings per share figures as to undermine their value."<sup>13</sup>

The Corporate Reporting Committee of the Financial Executives Institute recognized that the earnings-per-share figures of a few companies were misleading because of the use of unusual or "gimmick" securities. They objected, however, to the Accounting Principles Board's solution which denied the investor earnings per average common share. This objection is indicated in the following statement:

Let us first state that our committee agrees with the objectives of the SEC and the APB in attempting to arrive at a reasonable "earnings per share" computation. The recent proliferation of various unusual types of securities, "chinese securities," used primarily in the case of acquisitions to confuse and, in some cases, bury the true dilutive effect of the acquisitions, has resulted in misleading "earnings per share" data for a relatively few companies and this has created a question regarding the validity of the reports of all companies.

However, in spite of our agreement with the objectives, we believe that the solution proposed in the exposure drafts would

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<sup>13</sup>Memorandum from the Corporation Finance Committee of the Investment Bankers Association of America to the APB Subcommittee on Convertible Securities of the American Institute of Certified Public Accountants dated January 7, 1969.

result in more confusion and misunderstandings regarding the true results of the large number of companies that have confined the issuance of securities to the standard issues which do not in essence distort the "earnings per share."<sup>14</sup>

Edward F. Gee, Chairman of the Commercial Lending Committee of the American Bankers Association, expressed his concern as follows:

As proposed, any statement of common earnings per share would partially involve arbitrary assumptions based on arbitrary criteria. This, I submit, is not desirable and can lead only to misunderstanding and confusion. It denies the reader a solid base of existing legal reality from which to start his assessment of the significance of the fully diluted potential.<sup>15</sup>

A task force committed of the American Accounting Association recommended, pending further research, that earnings per average common share and earnings per share on a fully diluted basis be reported. The conclusions of this committee were based on the relevancy of the various statistics as shown in the following statement:

We can identify potential value for a calculation of earnings per share based on currently outstanding shares; for instance, as one basis for evaluating dividend policy. We can also identify potential value for a calculation of earnings per share based on full conversion of all securities. However, the selection of an equivalent number of shares somewhere between these two extremes and a related earnings figure implies that some other purpose is being served.<sup>16</sup>

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<sup>14</sup>Letter from J. J. Hangen, Chairman, Subcommittee on Convertible Securities of the Corporate Reporting Committee of the Financial Executives Institute, to the Accounting Principles Board of the American Institute of Certified Public Accountants dated December 30, 1968.

<sup>15</sup>Letter from Edward F. Gee, Chairman of the Commercial Lending Committee of the American Bankers Association, to Joseph Caramanica of the American Bankers Association dated March 31, 1969.

<sup>16</sup>Task Force Committee of the American Accounting Association, "Statement of Task Force Committee of American Accounting Association on Exposure Drafts of Proposed APB Opinions on Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants and Earnings per Share dated November 6, 1968," no date, p. 8.

The Task Force Committee rejected the residual security concept on the grounds that it could find no valid purpose being served by primary earnings per share. The committee stated:

We are disturbed that a particular intermediate earnings per share figure has been selected and designated as "primary" (namely, of singular importance) when this figure has in no way been established as being relevant to any user or use. For example, neither the investment value test nor the parity test for determining inclusion in the denominator of the earnings per share calculation has any necessary relationship to the potential dilution of share equity. Further, neither of these tests reveals either the imminence or likelihood of ultimate conversion of convertibles or exercise of warrants or options. One can argue normatively that imminence and/or likelihood of the ultimate dilution is relevant to certain types of decisions. We could not develop any rational basis for determining that the "primary" earnings per share as computed was relevant.<sup>17</sup>

Clyde Skeen, President of Ling-Temco-Vought, Inc., also questioned the relevance of an earnings figure which included some but not all potentially dilutive securities. He stated:

The residual concept is no more than an intermediate calculation somewhere between a factual one based on actual shares outstanding and the ultimate in theory represented by the fully diluted concept. If any calculation is justified to show what might be, it should deal with all possibilities rather than certain prescribed effects. We conclude that there is no need for the residual concept under any circumstances and recommend that it be completely discarded.<sup>18</sup>

Other respondents to the November 6, 1968 exposure draft favored earnings per average common share as the primary earnings-per-share figure because of its conformity to the legal realities of capital structures, its ease of calculation, and its understandability by the average

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<sup>17</sup>Ibid., pp. 8-9.

<sup>18</sup>Letter from Clyde Skeen, President of Ling-Temco-Vought, Inc., to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 10, 1969.

investor. The following comments are typical of those received by the Institute in support of this position:

. . . there should be a full recognition of the nominal facts and of the legal realities as they actually existed during and as of the end of the earnings period. This is tangible, determinable, definite, legally factual, and capable of computation and interpretation without dependence on assumptions or suppositions or market evaluations or other arbitrary criteria. It is, of course, the orthodox view of common stock earnings, and dividends, and net book value, per share. It assumes nothing--it relates only to the nominal legal and accounting realities that existed at the time.<sup>19</sup>

Although there was some disagreement as to whether fully diluted earnings per share should be given equal prominence with earnings per average common share by placing it on the face of the income statement instead of relegating it to the notes to the financial statements, most comment letters favored the fully diluted concept. The following comments of Edward F. Gee summarize the points made by most respondents to the November 6, 1968 exposure draft:

It is highly desirable, of course, that the Board require a computation and prominent presentation of earnings per share based on the maximum number of common shares or common share equivalents that can, under all existing issues, contracts, and agreements, be outstanding at some point in the future, after giving full effect to all debt-conversions, preferred stock conversions, stock options, warrants, stock purchase contracts, participating securities, two-class commons, contingent shares, or other capital structure devices. . . . This results in showing clearly the maximum existing potential dilution in common-share earnings, based on the most adverse suppositions. It thus presents the bleakest possible picture for a corporation's current per share common earnings. Certainly, no analyst or investor can ever be mislead when the presentation of such an extreme re-statement of current earnings is an essential accounting requirement.<sup>20</sup>

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<sup>19</sup>Letter from Edward F. Gee, Chairman of the Commercial Lending Committee of the American Bankers Association, to Joseph Caramanica of the American Bankers Association dated March 31, 1969.

<sup>20</sup>Ibid.

Dual, equal prominence concept. The Accounting Principles Board's insistence that primary earnings per share include common stock equivalents even though fully diluted earnings per share would also be required suggests a lack of confidence in the dual, equal prominence concept of APB Opinion No. 15. The Board had introduced the concept in APB Opinion No. 9 by strongly recommending that earnings per share and pro forma earnings per share be included in the statement of income. The Board concluded that this reporting format would ". . . help to eliminate the tendency of many users to place undue emphasis on one amount reported as earnings per share."<sup>21</sup>

Many respondents to the November 6, 1968 exposure draft supported the dual, equal prominence concept although they were opposed to the residual security concept and use of the word "primary" to describe one of the figures. In their opinion the practice of labeling one figure primary defeated the purpose of the dual, equal prominence concept. This was the view of a task force committee of the American Accounting Association, as reflected in the following comments.

We committee members believe that the provision of only one earnings per share carries the implication that it is generally relevant for many users making different decisions. Similarly, any earnings per share figure labelled as "primary" will carry the implication. We do not believe that any earnings per share figure can well serve the wide variety of uses to which it may be put. The majority of our committee believes that reporting only one earnings per share figure in the income statement will only serve to perpetuate and add support to an overly simple view of earnings per share. We therefore recommend that, as a minimum,

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<sup>21</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Reporting the Results of Operations, Opinions of the Accounting Principles Board, No. 9 (New York: American Institute of Certified Public Accountants, Inc., 1967), p. 119.

earnings per common share outstanding (weighted average for the year) and fully diluted earnings per share be required by the present opinion.<sup>22</sup>

The Board's refusal to allow earnings per average common share outstanding as one of the earnings-per-share figures may have reflected a fear that earnings per average common share would be emphasized and fully diluted earnings would be ignored by management in its press releases and by the financial press and statistical services.<sup>23</sup> William H. Harrison, Vice President and Controller of General Telephone and Electronics Corporation, pointed out this danger to the Accounting Principles Board in the following comments:

As a general comment pertinent to this and other bulletins, we feel that the accounting profession should recognize and be sensitive to the widespread use of investment information sources other than the fully detailed certified financial statements contained in annual reports and prospectuses. . . . The practical fact is that many investors inform themselves solely by reference to newspaper reports, stock guide summaries and other cryptic sources.<sup>24</sup>

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<sup>22</sup>Task Force Committee of the American Accounting Association, "Statement of Task Force Committee of American Accounting Association on Exposure Drafts of Proposed APB Opinions on Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants and Earnings per Share dated November 6, 1968," no date, p. 6.

<sup>23</sup>Many investors rely on information sources other than annual reports and Security and Exchange Commission filings. For example, Baker and Haslem, in a survey of common-stock investors in metropolitan Washington, D. C., found that 46.8 percent of the 775 respondents rated stockbrokers as the most important source of information. The most important source of investment information for 15.6 percent of the respondents was advisory services, followed by newspapers for 11.3 percent. Only 7.9 percent rated financial statements as the most important source. See H. Kent Baker and John A. Haslem, "Information Needs of Individual Investors," Journal of Accountancy, CXXXVI (November, 1973), 64-69.

<sup>24</sup>Letter from William H. Harrison, Vice President and Controller of General Telephone and Electronics Corporation, to Richard C. Lytle, Administrative Director of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 16, 1969.

The Board had considered the space problems created by two earnings-per-share figures early in its deliberations. For example, the Subcommittee on Convertible and Participating Securities met with representatives of Standard & Poor's Corporation on August 27, 1968. Standard & Poor's indicated that ". . . there would be space problems if they tried to give equal prominence to both figures, but they would do all they could to comply."<sup>25</sup>

Experience subsequent to the release of APB Opinion No. 15 indicates that the major investor services and financial newspapers do publish both earnings-per-share figures.<sup>26</sup> The argument that such publications would emphasize earnings per average common share outstanding

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<sup>25</sup>Memorandum prepared for the convertible securities file of the Accounting Principles Board of the American Institute of Certified Public Accountants dated August 27, 1968.

<sup>26</sup>The stated policies of two major publishers of investor services are offered as proof of this statement. See Moody's Investors Services, Inc., Moody's Industrial Manual; 1974, I (New York: Moody's Investors Services, Inc., 1974), x for the following statement of Moody's policy:

Earned per common share is generally shown as reported by the company in its annual report. Where shares outstanding have increased during the year earnings per common share is usually based on the average number of shares outstanding during the year (in some cases including common equivalent shares). Earned per share based on common on a fully diluted basis, is shown when reported by the company.

See also Standard & Poor's Corporation, Security Owner's Stock Guide, XXVIII (June, 1974), 1 for the following statement of Standard & Poor's policy:

Earnings per share are in general on a "Primary" basis as reported by company, excluding extraordinary items. If common equivalents are dilutive, the primary earnings are prefixed by symbol S; if potential dilution is significant, the extent is indicated for the latest year by reporting the "Fully Diluted" in the footnotes.



through the omission of fully diluted earnings per share appears, in retrospect, to be without merit. There is, however, at least one exception to this statement.

As discussed in Chapter 2, price-earnings ratios have been added to the price, volume, and dividend information contained in the daily stock quotations published by many newspapers.<sup>27</sup> Space is a critical constraint in publishing these quotations. As a result, primary earnings per share is the earnings figure selected for computing the daily price-earnings ratio.<sup>28</sup>

Management's emphasis on price-earnings ratio. The presumption that management would emphasize earnings per average common share while ignoring fully diluted earnings per share is based on the assumption that investors would place a higher value on the shares because of the higher earnings per share. Some managements, however, place great emphasis on the price-earnings ratio. High price-earnings ratios were the key to some of the acquisitions by conglomerates during the middle 1960's. Childs and others have shown that earnings per share of the acquiring company will increase in the year of the acquisition of a company provided: (1) the price paid per share for the acquired company divided by the acquired company's earnings per share is lower than the

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<sup>27</sup>See page 60.

<sup>28</sup>For example, on November 7, 1972 Daylin, Inc. announced primary earnings per share of \$1.60 and fully diluted earnings per share of \$1.43 for the period ended September 3, 1972. Daylin's stock closed at 17 7/8 on November 8, 1972, resulting in a reported price-earnings ratio of 11 based on primary earnings per share. Had fully diluted earnings of \$1.43 per share been used in the computation, the price-earnings ratio would have been 13 (rounded to the nearest integer).

acquiring company's price-earnings ratio and (2) the acquisition is accounted for on a poolings of interest basis.<sup>29</sup> This increase in earnings per share of the acquiring company occurs only in the year of the acquisition. Further increases related to the acquisition depend upon: (1) increasing the rate of return on the assets acquired (synergism) and (2) the return on the earnings of the acquired company which are retained and reinvested. This tendency of some managements to judge their success in terms of the price-earnings ratio of their stock is shown by Childs in the following statement from an unidentified executive:

Everything has changed, the name of the game today is get the current earnings up, boost the price-earnings ratio in every way possible and use the inflated paper to boost current earnings again and again by more acquisitions.

Look at the millions of dollars of stock value that such tactics create.<sup>30</sup>

A current example of management's emphasis on fully diluted earnings per share for purposes of computing price-earnings ratios is provided by Mesulam Riklis, Chairman and Chief Executive Officer of Rapid-American Corporation. As of January 31, 1974 Rapid-American had 4,053,333 shares of common stock reserved for the exercise of warrants. This amounted to 60.3 percent of its 6,726,679 outstanding common shares. Riklis stated:

We have made a basic decision in our company that we are going to emphasize fully-diluted earnings. We did that last year. It's

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<sup>29</sup>See John F. Childs, Earnings per Share and Management Decisions (Englewood Cliffs, N. J.: Prentice Hall, Inc., 1971), pp. 33-36. See also Marvin M. May, "The Earnings per Share Traps," Financial Analysts Journal, XXIV (May-June, 1968), 113-117.

<sup>30</sup>John F. Childs, Earnings per Share and Management Decisions (Englewood Cliffs, N. J.: Prentice Hall, Inc., 1971), p. 125.

the only way you can really make a comparison. So this year we will only show fully-diluted. We will not even show the others, because we don't like to be shown at a six-time multiple when on the fully-diluted basis we are a 10 or 11-time multiple. . . .<sup>31</sup>

If the price of Rapid-American's common fully reflects the anticipated dilution, an investor would perhaps be justified in using the higher multiple based on fully diluted earnings per share for certain of his investment decisions such as long-term price estimates. However, when the expiration date of the warrants is several years in the future the possibility exists that the market has not fully discounted the dilutive effect of the warrants. In addition, certain decisions are affected by the actual number of shares outstanding. Investment decisions of this type, such as short-term price estimates and dividend payout, might be more appropriately based on earnings per average common share.

The conclusion is that there is no one earnings-per-share figure appropriate for all purposes. Earnings per common share, which reflects the current legal rights of common shareholders, and fully diluted earnings per share, which reflects all potential dilution, are more appropriate, ipso facto, than primary earnings per share for the investment decisions discussed above. The common stock equivalents used in computing primary earnings reflect neither the imminence nor likelihood of the ultimate exercise of warrants. As a result, primary earnings per share does not appear to be a relevant tool for investment decisions.

Based on these conclusions, this study will proceed under the

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<sup>31</sup>"People and Profits--Rapid-American Corporation," Wall Street Reports, VII (April, 1973), 58.

assumption that, as a minimum, two earnings-per-share figures are relevant to an investor who chooses to use earnings per share in evaluating the common stock of companies with warrants outstanding. The first, earnings per average common share outstanding,<sup>32</sup> assumes no dilution of earnings through the exercise of warrants. The second, fully diluted earnings per share, indicates what earnings per share might have been had all warrants been exercised during the period. By comparing the two figures, an investor can determine the magnitude of the dilution which could occur if the warrants are exercised. This comparison is not possible under the guidelines of APB Opinion No. 15 because primary earnings per share includes essentially the same number of common stock equivalents resulting from warrants as does fully diluted earnings per share.

The conclusion that the potentially dilutive effect of warrants should be reflected only in fully diluted earnings-per-share computations leaves unresolved the question of what assumptions should be made regarding the use of the proceeds which would be received if the warrants

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<sup>32</sup>The use of average common shares in computing earnings per common share is based on the Institute's position. Others would use the number of shares outstanding at the end of the period. For example, Eric L. Kohler, in a comment letter to Richard C. Lytle on the November 6, 1968 exposure draft, stated:

. . . Averaging outstanding shares during a reporting period . . . can be justified only where earnings have actually been modified by changes in such shares (as from a takeover). Aside from this exception, I have never seen a situation where other types of changes in outstanding shares have had any noticeable effect on net income. "Earnings per share" is a ratio of the moment, not one that has been effective throughout a reporting period. . . . Where additional shares have been sold or issued, say, as a bonus shortly before the end of the period, the APB0-9 formula may have the effect of seriously overstating the ratio.

Consideration of this question is beyond the scope of this study.

were exercised. APB Opinion No. 15 makes the general assumption, for computational purposes, that the funds would be used to purchase common stock at current market prices. The result of this assumption is that earnings per share varies inversely with the price of the underlying common stock. This and other assumptions regarding the use of warrant proceeds are considered in the following sections of this chapter.

#### DEVELOPMENT OF GUIDELINES FOR COMPUTING FULLY DILUTED EARNINGS PER SHARE

In Chapter 2 of this study the attributes of earnings per share were examined. In Chapter 3 the characteristics of warrants were analyzed. The purpose of this section is to formulate guidelines for reflecting the potentially dilutive effect of warrants in fully diluted earnings per share. In formulating these guidelines the characteristics of warrants will be related to the attributes of earnings per share used by investors in order to determine the most appropriate method of reflecting the dilutive effects of warrants. During the course of this analysis, reference will be made to the summary of observations about earnings per share and warrants detailed in the first section of this chapter.

Earnings per share relates the absolute amount of earnings theoretically available to common stockholders to the capital structure which existed during the period (Observation No. 1). Reducing earnings to a share basis is necessary in order to establish valid relationships with other variables which influence common stock investment decisions. These other variables are usually expressed on a per-share basis. For

example, common stock prices are always quoted on a per-share basis and dividends are usually expressed in terms of one share.

Investors who use earnings per share to evaluate common stocks are interested in comparisons. They compare current period earnings per share with those of preceding periods for the same company or they compare earnings per share of one company with those of another company in the same time frames. Similar comparisons are made by relating earnings per share to price per share and to dividends per share. Chapter 2 concluded that the important attributes of earnings per share were the absolute amounts, the trend, and the variability of the trend (Observation No. 2).

In reflecting the potentially dilutive effect of warrants in earnings per share, the characteristics of warrants and the effect of these characteristics on the attributes of earnings per share must be considered. These characteristics of warrants and their effect on the attributes of earnings per share are discussed within the following framework: (1) the period over which dilution should be reflected, (2) the amount of dilution which should be reflected, (3) the rate of return on warrant proceeds, and (4) the variability of the rate of return.

Period over Which Dilution  
Should be Reflected

Recognition of potential dilution in fully diluted earnings per share reduces the absolute amount of earnings per share. Consequently the trend and variability of the trend of earnings per share are also affected (Observation No. 2). Since these are important attributes of

earnings per share, the question of the timing of the recognition of potential dilution becomes important.

Chapter 3 of this study concluded that the issuance of warrants is a management decision. Warrants are usually attached to other securities as an inducement which facilitates the sale of the securities and/or reduces the interest or dividends. These benefits are reflected in the financial statements from the date of issue of the warrants (Observation No.4). Carteris paribus, earnings per share during the period over which the warrants are outstanding is higher than it otherwise would have been.

This improved performance for which management receives credit is not without potential cost to common stockholders. The cost to a current stockholder of management's decision to issue warrants is the dilution of his equity in the corporation if the warrants are exercised. A proper matching of the sacrifices resulting from the issuance of warrants with the benefits derived therefrom requires, therefore, that the potentially dilutive effect of warrants be reflected in fully diluted earnings per share from the date warrants are issued to the date of exercise or expiration. Reflecting the potential dilution in fully diluted earnings per share during the period warrants are outstanding accomplishes the following: (1) management is made accountable for the sacrifices as well as benefits of issuing warrants and (2) the common stockholder is made aware of the possible dilution to his equity. The conclusion is, therefore, that the dilutive effect of warrants should be recognized in fully diluted earnings per share during all periods in which warrants are outstanding.

Amount of Dilution Which  
Should Be Reflected

The term dilution is used in several different but interrelated contexts by financial analysts and investors. Dilution may refer to a loss of voting power, a decline in asset values (book value) per share, a decline in earnings per share, or a decline in market value per share.<sup>33</sup> In each context the cause of the dilution is related to the issuance of additional shares of common stock. Since this study is concerned with the potential dilution in earnings per share which might be attributed to warrants, an understanding of dilution in its various contexts and of how dilution is reflected in earnings per share when warrants are exercised is important.

Dilution of voting power. Dilution of voting power occurs when additional common stock is issued to new stockholders. The amount of the dilution for the current stockholders as a group is the number of new shares issued to non-current stockholders expressed as a percentage of the total number of shares owned by current stockholders. Since warrants are frequently attached to debt, preferred stock, and non-preemptive common stock issues, a loss of voting power usually occurs when warrants are exercised. If an individual stockholder wishes to avoid dilution of voting power, he must purchase shares of the new issue proportional to his current holdings.

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<sup>33</sup>Philip M. Hubbard, Jr., classifies dilution into these four categories in an article entitled "The Many Aspects of Dilution." The discussion of dilution which follows is based, in part, on the ideas presented in that article. See Philip M. Hubbard, Jr., "The Many Aspects of Dilution," Financial Analysts Journal, XIX (May-June, 1963), 33-40.



Dilution of asset values. Asset values are diluted when an issue of common stock is sold at a price per share (or exchanged for other assets valued at fair market expressed on a per-share basis) which is lower than the current book value per share. Theoretically, book value should be based on the current replacement cost of assets rather than original cost in order to provide for the comparability of assets presently employed with those being acquired by the new issue of common stock.

Since assets are reported at original cost rather than replacement value, dilution of asset values will not be reflected in the financial statements unless the assets acquired through the issuance of additional common stock, expressed on a per-share basis, are less than the book value per share of existing assets valued at original cost. This dilution of book value has important implications for earnings per share. If the funds acquired through the issuance of additional common stock which dilutes book value earn at the same rate as existing net assets, dilution of earnings per share will occur. Management should not, therefore, issue common stock at prices which dilute asset values unless the new assets can be employed in a more productive manner than existing assets. If the new assets are more productive, then the current dilution of assets values will be offset in the long run through increased earnings retained in the business.

Dilution of earnings per share. Dilution of earnings per share occurs when the percentage of increase in earnings produced by the assets acquired through the issuance of additional common stock is less than

the percentage of increase in common shares outstanding as a result of the issue. Dilution of earnings per share, therefore, is a function of: (1) the earnings produced by existing assets, (2) the earnings produced by the assets acquired through the issuance of additional common stock, (3) the number of common shares outstanding prior to the new issue, and (4) the number of shares issued to acquire the new assets (Observation No. 7).

An analysis of the relationships among these functions will provide an understanding of the dilution which will be reflected in earnings per share when dilutive warrants are exercised. Functions (1) and (3), for the purposes of this analysis, are constant. Dividing Function (1) (the earnings produced by existing assets) by Function (3) (the number of common shares outstanding prior to the new issue) produces the earnings per share which would have existed had warrants not been exercised. Dividing Function (2) (the earnings produced by the assets acquired through the exercise of warrants) by Function (4) (the number of shares issued through the exercise of warrants) gives the earnings per share produced by the additional capital. Dilution of earnings per share will result if the earnings per share produced by the additional capital received from the exercise of warrants is less than the earnings per share of the existing capital.

Given the rate of return of existing net assets and the book value per share of those assets, the dilution which will be reflected in earnings per share through the exercise of warrants is determined by two variables: (1) the exercise price of the warrants and (2) the rate of return earned on the exercise price. The effect of each of the nine

possible combinations of these variables on earnings per share is as follows:

Status of Variables  
Affecting Earnings per Share

| <u>If Book Value<br/>per Share of<br/>Existing Net<br/>Assets Is</u> | <u>If Rate of<br/>Return on<br/>Existing Net<br/>Assets Is</u> | <u>Effect on Earnings<br/>per Share</u>                    | <u>Approximate Rate of<br/>Return on Exercise<br/>Price Required to<br/>Prevent Dilution</u> |
|--|--|--|--|
| Less than exercise price per share                                   | Less than rate of return on exercise price                     | Non-dilutive   | Not applicable   |
| Less than exercise price per share                                   | Equal to rate of return on exercise price                      | Non-dilutive   | Not applicable   |
| Less than exercise price per share                                   | Greater than rate of return on exercise price                  | Indeterminate; depends on rate of return on exercise price | EPS on existing assets divided by exercise price per share                                   |
| Equal to exercise price per share                                    | Less than rate of return on exercise price                     | Non-dilutive   | Not applicable   |
| Equal to exercise price per share                                    | Equal to rate of return on exercise price                      | Non-dilutive   | Not applicable   |
| Equal to exercise price per share                                    | Greater than rate of return on exercise price                  | Dilutive   | Not applicable   |

Status of Variables  
Affecting Earnings per Share

| <u>If Book Value<br/>per Share of<br/>Existing Net<br/>Assets Is</u> | <u>If Rate of<br/>Return on<br/>Existing Net<br/>Assets Is</u> | <u>Effect on Earnings<br/>per Share</u>                             | <u>Approximate Rate of<br/>Return on Exercise<br/>Price Required to<br/>Prevent Dilution</u> |
|--|--|---|--|
| Greater than<br>exercise price<br>per share                          | Less than<br>rate of<br>return on<br>exercise<br>price         | Indeterminate;<br>depends on rate<br>of return on<br>exercise price | EPS on existing<br>assets divided by<br>exercise price per<br>share                          |
| Greater than<br>exercise price<br>per share                          | Equal to<br>rate of<br>return on<br>exercise<br>price          | Dilutive  | Not applicable   |
| Greater than<br>exercise price<br>per share                          | Greater than<br>rate of<br>return on<br>exercise<br>price      | Dilutive  | Not applicable   |

Earnings per share, therefore, will always be diluted through the exercise of warrants if the exercise price is equal to or less than the book value per share of existing assets and the rate of return on the exercise price is less than the rate of return on existing net assets. If the rate of return on the exercise price and the rate of return on existing net assets are equal, dilution will occur if the exercise price is less than the book value per share of existing assets.

Dilution of earnings per share through the exercise of warrants may also occur when the exercise price is higher than the book value per share if the rate of return on the exercise price is sufficiently lower than the rate of return on existing net assets. On the other hand, dilution will not occur when the exercise price per share is lower than the book value per share of existing assets if the rate of return on the

exercise price is sufficiently higher than the rate of return on existing net assets. In each of these two cases, the approximate rate of return on the exercise price necessary to prevent dilution is the quotient obtained by dividing the earnings per share of existing net assets by the exercise price per share. This rate is referred to as the cost of the capital obtained by the exercise of warrants. Dilution, therefore, will be reflected in earnings per share whenever the rate of return on warrant proceeds is less than the cost of the capital obtained from the warrants exercised.

Dilution of market price on common stock. Although this study deals primarily with the dilution of earnings per share caused by the issuance and exercise of warrants, many investors are perhaps more concerned with the dilution of market price of the underlying common shares which may result from the exercise of warrants. The investor's interest in the dilution of earnings per share may be limited to the extent that he believes dilution of earnings per share will be reflected in a dilution of the common stock price.

Dilution of earnings per share through the exercise of warrants is only one of many factors which might be related to a dilution of market price. In fact, an immediate dilution in earnings per share caused by the exercise of warrants might not result in a dilution of price. If, for example, investors feel that the funds provided by the exercise of warrants will be invested profitably and thereby result in a future increase in the growth rate of earnings per share, the price of the shares may increase rather than decrease. On the other hand, a failure to

maintain the dividend rate because the exercise of warrants has increased dividend requirements would result in the dilution of market price to the extent that price is determined by dividends rather than earnings. Unless offset by other factors, dilution of market price will also result from an increase in the supply of shares made available for trading through the exercise of warrants. Regardless of the causes for dilution of market price, the importance of warning investors of this potential dilution is apparent. Earnings per share is perhaps the most effective device for providing this warning. By reflecting the potential dilution of warrants in fully diluted earnings per share for the entire period that warrants are outstanding, the investor is alerted to the potential dilution of the market price of his shares.

#### Rate of Return on Warrant Proceeds

In the preceding discussion of dilution, the conclusion was reached that dilution of earnings per share through the exercise of warrants will occur when the rate of return earned on warrant proceeds is less than the cost of the capital derived from the exercise of warrants where the cost of capital provided by warrants is defined as the rate obtained by dividing the earnings per share of existing assets by the exercise price per share. In theory, therefore, the dilution which is reflected in earnings per share when dilutive warrants are exercised is easily calculated, given the rate of return earned on warrant proceeds and the cost of the capital provided by those proceeds.

The application of this theory in practice, however, presents some problems. In order to determine the rate of return on warrant

proceeds or the cost of the capital provided by the exercise of warrants, the absolute amount of earnings must be separated into two component parts: (1) the earnings applicable to existing capital and (2) the earnings applicable to warrant proceeds. The earnings applicable to warrant proceeds, of course, is a function of how the funds are employed by management. Warrant agreements, unlike bond indentures, generally do not require warrant proceeds to be used for specific purposes. Thus the funds become a part of the pool of corporate assets and lose their separate identity. As part of the pool of assets the funds may be used: (1) to provide additional working capital, (2) to purchase plant and equipment, (3) to purchase long-term investments, (4) to retire debts, (5) to acquire treasury stock, (6) to pay dividends, or (7) for any other legitimate corporate purpose as well as any combination of these purposes.

Barring a specific provision in the warrant agreement, any projection on the date of issue as to how warrant proceeds will be utilized if and when the warrants are exercised five, ten, or fifteen years in the future is pure speculation. In the first place, there may be no warrant proceeds because many issues are not exercised (Observation No. 6). Secondly, if the warrants are exercised, the proceeds become a part of the pool of assets and their specific identity is lost.

Under these circumstances, determination of the exact amount of dilution in earnings per share which is caused by the exercise of warrants is impossible. The closest approximation to the appropriate rate of return on warrant proceeds would appear to be the rate of return on average assets before interest and taxes for the period in which the warrants

are exercised. In applying this rate to warrant proceeds, adjustment for income taxes must be made. The rate of return on average assets before interest and taxes is preferable to a rate of return on average owner's equity because the latter rate includes the leverage effect of debt.

Although the rate of return on warrant proceeds can be approximated by the rate of return on average assets before interest and taxes, thus excluding the leverage effect of debt, the cost of the additional capital provided by warrants is affected by leverage because the earnings per share of existing capital reflects the effects of any debt securities outstanding. As previously explained, the cost of the warrant capital is the earnings per share of existing capital divided by the exercise price per share. Given the rate of return on warrant proceeds, the cost of warrant capital is readily determinable because the values of all other variables are already known or can be calculated. These variables and the sources of their values are: (1) earnings per share of existing capital determined by subtracting from total earnings the earnings applicable to warrants and dividing the result by the average number of shares of common outstanding exclusive of those issued through the exercise of warrants and (2) exercise price per share as provided by the warrant agreement.

The key variable, therefore, for determining the dilution to earnings per share caused by the exercise of warrants is the rate of return earned on warrant proceeds. Unless the warrant agreement provides specifically for the utilization of proceeds, the funds received from the exercise of warrants are commingled with existing funds and become



a part of the pool of assets of the business. Thus the determination of a specific rate of return for the warrant proceeds becomes impossible. Under these circumstances, the rate of return on average assets before interest and taxes appears to be the appropriate approximation of the actual rate of return.

Variability of Rate of Return  
on Warrant Proceeds

In the preceding section, the conclusion was reached that the basic variable determining the amount of dilution which is reflected in earnings per share in the period in which warrants are exercised is the rate of return earned on the warrant proceeds. The difficulty of determining this rate has been explained. Dilution, however, will automatically be reflected as a reduction of earnings per share when the warrants are exercised regardless of whether the amount can be accurately determined or not.

The problem with which this study is concerned is that of reflecting the actual dilution of earnings per share encountered when warrants are exercised in fully diluted earnings per share for every period in which the warrants are outstanding. Clearly this is impossible. Even if the rate of return on warrant proceeds were known in advance, as would be the case if the warrant agreement provided that warrant proceeds were to be used to retire a specific debt issue, the amount of the dilution could not be determined in advance of the warrant exercise. This is true for two reasons. First, the warrants might not be exercised and thus no dilution would result. Secondly, the amount of actual dilution is dependent not only on the rate of return on warrant proceeds but also on

the cost of warrant capital in the year of exercise. As previously explained, the cost of the capital provided by the warrants is a function of the earnings per share of the existing capital in the period of exercise and of the exercise price of the warrants. The cost of the warrant capital, therefore, cannot be determined until the period of exercise.

Given these conditions, the potential dilution to earnings per share which will be reflected in fully diluted earnings per share must be estimated from information available when the periodic financial statements are prepared. Ideally, the rate of return on warrant proceeds selected will be the one which produces a dilution estimate that most closely approximates the actual dilution which will be reflected in earnings per common share when the warrants are exercised. As pointed out in Chapter 2, investors consider variations in the trend of earnings per share a significant attribute of earnings per share for common stock evaluation purposes (Observation No. 2). They place a lower multiple on earnings with higher variability and vice versa. Therefore, the rate of return on warrant proceeds selected should, in each period, produce a consistent estimate of the actual dilution without causing variations in fully diluted earnings per share from period to period because of variations in the rate which are attributable to factors not related to dilution as it will ultimately be reflected in earnings per common share.

Any method of computing fully diluted earnings per share designed to reflect the potential dilution of warrants which employs the market price of the underlying common stock and/or the market price, premium,

or theoretical value of the warrants is inappropriate. The reasons for the unsuitability of such methods are discussed in the following two paragraphs.

The market price of the underlying common stock and/or the market price, premium, or theoretical value of the warrants are not variables which enter directly into the determination of the dilution which is reflected in earnings per share when warrants are exercised. These variables do have an indirect effect on dilution in that their status in the period immediately preceding the expiration date of the warrants determines whether the warrants will be exercised (Observation No. 6). The conditions precedent necessary to induce exercise are that the theoretical value of the warrants be positive and that their market price be close to their theoretical value. As previously explained, the relevant variables for determining the dilution of earnings per share are the earnings per share which would have existed had the warrants not been exercised, the exercise price of the warrants, and the rate of return on the warrant proceeds.

Even if the pricing variables described above were relevant to the dilution actually reflected in earnings per share upon the exercise of warrants, as would be the case if warrant proceeds were actually used to purchase treasury stock, the use of the pricing variables to estimate dilution in other periods would be inappropriate.<sup>34</sup> For example, the

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<sup>34</sup>Barring a specific need for treasury stock, the purchase of treasury stock with warrant proceeds is unlikely because it is an admission by management that it cannot invest the warrant proceeds at a rate sufficiently high to return the cost of capital. The Accounting Principles Board adopted the treasury stock method not on the grounds that warrant funds are likely to be used to purchase treasury stock but

treasury stock method of computing fully diluted earnings per share, as well as any other method utilizing common stock or warrant prices, introduces variability into the trend of earnings per share. This variability is unrelated to the actual dilution which may result from the exercise of warrants and is therefore undesirable. These methods assume that the price relationships which exist between common stock and warrants in each period will be the same as those existing when the warrants are exercised. Such an assumption is unwarranted because it ignores the volatility of common stock prices. As documented in Chapter 3,<sup>35</sup> the common stock prices of companies with warrants outstanding are likely to be more volatile than those of the average listed company because the leverage which appeals to warrant investors is derived from fluctuations in the underlying common stock price.

The conclusion is that methods of computing fully diluted earnings per share designed to reflect an estimate of the actual dilution of earnings per share which may result from the exercise of warrants should utilize only those variables which actually affect dilution. Price related variables that have no direct affect on the actual dilution which may be reflected in earnings per share when warrants are exercised merely introduce variability into fully diluted earnings per share and destroy interperiod and intercompany comparability.

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merely as a convenient means of reflecting dilution in earnings per share during the periods warrants are outstanding. The treasury stock method, however, is not a reliable estimator of the actual dilution which may result from the exercise of warrants. This is shown in the text which follows.

<sup>35</sup>See pages 86-87.

Summary of Guidelines for Computing  
Fully Diluted Earnings per Share

In summary, the preceding analysis of the attributes of earnings per share in relation to the characteristics of warrants leads to the conclusion that any method of computing fully diluted earnings per share which is designed to reflect an estimate of the actual dilution which may occur when warrants are exercised should meet the following guidelines:

1. The dilutive effect of warrants should be reflected in fully diluted earnings per share from the date of issuance to the date of exercise or expiration of the warrants. Management is thus held responsible for the sacrifices as well as the benefits of issuing warrants and the potential dilution of control, net asset values, earnings per share and market price is forcefully brought to the attention of investors.

2. The amount of dilution which should be reflected in fully diluted earnings per share during each period warrants are outstanding is the current best estimate, based on the latest relevant data available, of the actual dilution which will result if and when the warrants are exercised. The amount of dilution which would have resulted had warrants been exercised in the current period being reported is relevant only to the extent that it is a good estimate of the actual dilution which will result if and when the warrants are exercised.

3. The actual dilution which will be reflected in earnings per share when warrants are exercised is a function of the number of common shares issued through the exercise of warrants, the number of common shares outstanding when the warrants are exercised, the earnings on the

warrant proceeds, and the earnings of assets existing prior to the exercise of warrants. Dilution of earnings per share will occur if the earnings from warrant proceeds per share of common issued through the exercise of warrants is less than the earnings per share of the capital existing prior to the exercise. In other words, dilution occurs if the rate of return on warrant proceeds is less than the cost of the warrant capital. The key variable in determining dilution, therefore, is the rate of return on warrant proceeds. The method chosen for computing fully diluted earnings per share should incorporate a realistic estimate of the rate of return that will be earned on warrant proceeds.

4. The method chosen for computing fully diluted earnings per share should not incorporate an estimated rate of return on warrant proceeds which injects variability into fully diluted earnings per share that is not a result of the operating conditions experienced by the firm during the period. In other words, the estimated rate of return chosen to approximate the actual rate of return on warrant proceeds should not vary from period to period as the result of factors external to the firm which have no direct bearing on the dilution of earnings per share. The introduction of variability not related to operations of the firm could result in incorrect decisions by those investors who are influenced by variability in the trend of earnings per share.

#### CONFORMITY OF VARIOUS METHODS OF COMPUTING FULLY DILUTED EARNINGS PER SHARE TO GUIDELINES

There are basically four different methods which might be used to compute fully diluted earnings per share when the purpose is to

reflect in the computation an estimate of the actual dilution which may result from the exercise of warrants. These are:

- I - equivalent shares considered outstanding - no credit given for earnings on potential proceeds
- II - equivalent shares considered as outstanding - credit given for earnings on potential proceeds:
  - (a) - at some earnings rate determined from data independent of the corporation's own rate of return
  - (b) - at a rate based on the earnings of the corporation in relation to the current market price of its common stock
- III - shares outstanding considered to include shares under option reduced to a portion based on the relationship of the exercise price of the warrant and the current market price of the common stock - also known as the purchase of treasury stock method
- IV - shares outstanding considered to include shares under option reduced to a portion based on the relationship of the market price of the warrant and the current market price of the common stock - the Graham-Dodd formula.<sup>36</sup>

In the following section each of these methods of computing fully diluted earnings per share is analyzed in terms of the guidelines developed in the preceding section. These methods and the relationships among them can perhaps best be explained by expressing them as equations. The following symbols are used:

EPS = earnings per share

NI = net income applicable to common shares

CS = common shares outstanding

WS = common shares issuable through the exercise of warrants

MPC = market price per share of common stock

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<sup>36</sup>Letter from Frank T. Weston, member of the Subcommittee on Convertible Debt of the Accounting Principles Board of the American Institute of Certified Public Accountants, to Philip L. Defliese, Chairman of the Subcommittee on Convertible Debt of the Accounting Principles Board of the American Institute of Certified Public Accountants, dated January 20, 1969. These four categories are not completely exhaustive of all possibilities. Category II should perhaps be expanded to include internal rates of return such as the cost of debt and the return on assets.

MPW = market price of warrants necessary to acquire one share  
of common stock

EPW = exercise price of warrants per common share

R = designated earnings rate on warrant proceeds, net of tax  
effect.

### Method I

No earnings are assumed on the proceeds from warrants under Method I and the equivalent shares under option are considered to be outstanding. Fully diluted earnings per share is simply the net income for the period divided by the sum of the common shares outstanding and the common shares issuable through the exercise of warrants. The equation is:

$$\text{EPS} = \text{NI} / (\text{CS} + \text{WS})$$

where  $\text{NI} > 0$ .

This method will reflect an estimate of dilution in every period in which there is net income available to common stockholders. However, this method fails to conform to the guidelines for computing earnings per share because the amount of estimated dilution is excessive. The assumption of a 0 percent earnings rate on warrant proceeds is clearly unrealistic. Since warrant agreements generally do not restrict the use of warrant proceeds, the funds could always be invested in government securities until the firm developed a more profitable project. The use of a constant rate of return on warrant proceeds, although inappropriate in this case, does prevent variability which is not related to the operating conditions of the firm from influencing the trend of fully diluted earnings per share. Interperiod and intercompany comparisons



are therefore valid as long as the method is consistently used in all periods and by all companies. The conclusion is that this method fails to meet the requirements of Guidelines Nos. 2 and 3 in that the dilution produced by this method is not a good estimate of the actual dilution which will be reflected in earnings per share if and when the warrants are exercised. This method does not produce a good estimate of actual dilution because it assumes an inappropriate rate of return on the warrant proceeds.

#### Method II-(a)

Method II-(a) assumes an earnings rate on warrant proceeds independent of the corporation's own rate of return. The effect of this assumption is to assert that the corporation will invest warrant proceeds in private or governmental securities. The rate of return is therefore dependent on the type of security designated in the assumption. Thus the designated rate might be the bank prime rate, the U. S. treasury bill discount rate, the commercial paper rate, or any other rate of return on investment securities independent of the corporation. The equation for earnings per share under this method is:

$$\text{EPS} = \text{NI} / (\text{CS} + \text{WS}) + (\text{R}) (\text{EPW}) (\text{WS}) / (\text{CS} + \text{WS})$$

where  $(\text{NI} / \text{CS}) > \text{EPS} > 0$ .

This method will provide an estimate of dilution in every period warrants are outstanding except during periods when there is a net loss or the earnings rate selected for warrant proceeds exceeds the cost of the warrant capital. This method is always less dilutive than Method I. In fact, Method II realistically recognizes that the exercise of warrants may result in enhancement rather than dilution of earnings per share.

Enhancement of earnings per share will occur if the rate of return on the assumed investment is greater than the cost of warrant capital.

The assumption that warrant proceeds are invested in the securities of other corporations or governmental units results in a realistic estimated rate of return on warrant proceeds. As a matter of fact, this course of action by management would not be unreasonable if the timing of exercise of warrants was such that the funds were not currently needed in operations. A temporary investment in securities would produce revenues until a more profitable use of the funds materialized.

Although investment in short term securities may be the course of action pursued by management when warrants are exercised, the use of the rate of return on such investments during interim periods as an estimator of the actual dilution may be inappropriate. The rate of return on investments would be undesirable as an estimator of actual dilution if it caused excessive variability in the periodic computations of fully diluted earnings per share. Inevitably some variability would result because interest rates do change over time. The change, however, has been gradual until recent years. For example, the U. S. bank prime rate remained unchanged at 4.5 percent from August 23, 1960 until December 6, 1965.<sup>37</sup> Other interest rates, although more variable, tend to correlate with the prime rate. Unfortunately all interest rates have become more volatile in recent years. Despite this increase in volatility, interest rates remain much more stable than stock prices.

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<sup>37</sup>J. T. Ball, Computing Earnings per Share: Unofficial Accounting Interpretations of APB Opinion No. 15 (New York: American Institute of Certified Public Accountants, Inc., 1970), p. 108.

Use of an interest rate as the estimator of the rate of return on warrant proceeds is, therefore, preferable to an estimator which is based on stock prices.

In summary, Method II-(a) meets most of the guidelines for computing fully diluted earnings per share. Except for the variability introduced into the computation by changing interest rates, this method provides for interperiod comparability. Intercompany comparability is also good if the assumption is made that all companies are required to use the same rate of return.

#### Method II-(b)

Method II-(b) is based on the current earnings per share of the company, computed without regard to dilutive securities, in relation to the current market price of the common shares. The equation for computing fully diluted earnings per share under this method is:

$$\text{EPS} = \frac{\text{NI}}{\text{CS} + \text{WS}} + \left( \left( \frac{\text{NI}}{\text{CS}} \right) / \text{MPC} \right) (\text{EPW}) (\text{WS})$$

$$\text{where } (\text{NI} / \text{CS}) > \text{EPS} > 0.$$

This method of computing fully diluted earnings per share provides an estimate of actual dilution of earnings per share in periods when a net loss has not been incurred and the exercise price of the warrants is less than the market price of the common. A serious disadvantage of this method is that it will not produce an estimate of dilution in periods when the exercise price of the warrants exceeds the market price of the common. As shown in Chapter 3, the fact that the warrant exercise price exceeds the common stock price during interim periods bears no relationship to the ultimate dilution which may be reflected in earnings per share if warrants are exercised. The relationship between the

warrant exercise price and the common stock price assumes importance only in a brief span of the time immediately preceding the expiration date of the warrants. During that period the market price of the common must exceed the exercise price of the warrants if conversion is to occur.

The term  $((NI / CS) / MPC)$  in the equation for Method II-(b) is the rate of return on the current market price of common stock; i.e., it is the reciprocal of the price-earnings ratio, usually referred to as the earnings-price ratio. In capital budgeting this rate is considered to be the cost of common equity capital. Method II-(b) will, therefore, produce higher estimates of dilution than Method II-(a) when the earnings-price ratio is less than the rate of return assumed from data independent of the corporation. Thus high price-earnings ratio companies would show less fully diluted earnings per share under this method than under Method II-(a) while low price-earnings ratio companies would show higher fully diluted earnings per share.

Method II-(b) makes the assumption that warrant proceeds can never earn at a rate greater than the cost of common equity capital  $((NI / CS) / MPC)$ . This is tantamount to saying that warrants will always be dilutive when exercised because the cost of common equity capital must be less than the cost of warrant capital  $((NI / CS) / EPW)$  in order for warrants to be exercised. This is true because the market price of the common (MPC) must exceed the exercise price of the warrants (EPW) in order for a rational investor to exercise. It is the rate of return which can be earned on warrant proceeds, not the cost of common equity capital, in relation to the cost of the warrant capital which determines the actual amount of dilution, if any, to earnings per share.

The impropriety of assuming that warrant proceeds earn at a rate equivalent to the company's earnings-price ratio is clearly demonstrated in the following tabulation:<sup>38</sup>

| <u>First Quarter, 1974</u>         |   |  |  |  |
|------------------------------------|---|--|--|--|
| <u>Company</u>                     | <u>Return on<br/>Invested<br/>Capital<br/>(Percent)</u> | <u>Return on<br/>Common<br/>Equity<br/>(Percent)</u> | <u>Price-<br/>earnings<br/>Ratio<br/>4-30-74</u> | <u>Earnings-<br/>price<br/>Ratio<br/>4-30-74</u> |
| LTV                                | 8.3   | 18.5   | 2  | .005   |
| McDonald's                         | 14.6  | 24.0   | 38   | .026   |
| International<br>Business Machines | 19.2  | 20.4   | 20   | .050   |
| U. S. Steel                        | 8.0   | 9.8  | 6  | .167   |

The assumption that McDonald's and International Business Machines would earn only 2.6 percent and 5 percent respectively on warrant proceeds when they are currently earning 14.6 percent and 19.2 percent respectively on invested capital is not reasonable. Equally unreasonable is the assumption that LTV and U. S. Steel, currently earning 8.3 percent and 8 percent respectively on invested capital, could achieve returns of 50 percent and 16.7 percent respectively on warrant proceeds.

Another serious disadvantage of Method II-(b) as an estimator of the dilution which will actually be reflected in earnings per share when warrants are exercised is the variability which this method causes to be reflected in fully diluted earnings per share. This variability is the result of using the market price of the common stock as one of the variables in the estimated rate of return on warrant proceeds. Use of the common stock price in the term for the estimated rate of return

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<sup>38</sup>Compiled from "Survey of Corporate Performance: First Quarter 1974," Business Week, May 11, 1974, pp. 69-90.

$((NI / CS) / MPC)$  can produce incongruous results in fully diluted earnings per share. Assume, for example, that the absolute amount of earnings increases and that as a result of increased earnings and expectations of future increases in earnings, the price of the common stock of a company with warrants outstanding increases. The result is a decrease in fully diluted earnings per share over what would have been reported had there been no increase in the common price. Yet the price of the common stock will have no effect on the amount of dilution in earnings per share when the warrants are exercised (except in the unlikely event that the proceeds are used to purchase treasury stock). Method II-(b), therefore, introduces variability into fully diluted earnings per share that is not a result of the operating conditions encountered by the company.

In summary, Method II-(b) fails to meet the guidelines for computing fully diluted earnings per share. It fails to estimate dilution in periods when the warrant exercise price exceeds the common stock price. An unrealistically low rate of return on warrant proceeds is assumed for high price-earnings ratio companies and an excessively high rate of return is assumed for low price-earnings ratio companies. Further, the rate of return assumed in each period varies inversely with the price of the common stock. The result is that neither inter-period nor intercompany comparisons of fully diluted earnings per share are valid.

### Method III

Method III is known as the treasury stock method. It is the method, modified by the 20 percent limitation, adopted by APB Opinion

No. 15. This method makes the assumption that warrant proceeds are used to purchase treasury stock at current market prices. Such an assumption is unrealistic for at least two reasons.<sup>39</sup> In the first place, a corporation would not normally purchase its own stock unless management had reached the conclusion that the stock was undervalued in the market place. If the stock is undervalued, there is the likelihood that the stock is selling below the exercise price of the warrants. Thus no funds from the exercise of warrants would be available for the purchase of treasury stock. In the second place, sizable purchases of treasury stock could not be made without affecting the price of the stock.

The Accounting Principles Board recognized the limitations of the purchase of treasury stock as an actual application of warrant proceeds. The method was adopted because it offered ". . . a practical approach to reflecting the dilutive effect that would result from the issuance of common stock under option and warrant agreements . . . ."40

The equation for Method III is:

$$\text{EPS} = \text{NI} / (\text{CS} + (\text{WS} - ((\text{EPW}) (\text{WS}) / \text{MPC})))$$

where  $(\text{NI} / \text{CS}) > \text{EPS} > 0$ .

The term  $((\text{EPW}) (\text{WS}) / \text{MPC})$  is the number of treasury shares assumed to be purchased and these shares are deducted from the number of shares issuable through the exercise of warrants. Although the equation for

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<sup>39</sup>The two reasons cited are in addition to possible legal restrictions on the purchase of treasury stock. For a discussion, see page 202.

<sup>40</sup>Accounting Principles Board of the American Institute of Certified Public Accountants, Earnings per Share, Opinions of the Accounting Principles Board, No. 15 (New York: American Institute of Certified Public Accountants, Inc., 1969), p. 231.

Method III does not specify a rate of return on warrant proceeds, the purchase of treasury stock is equivalent to a rate of return slightly less than the earnings-price ratio assumed by Method II-(b). Proof of this statement is offered in the following paragraphs.

The terms of the equation for Method II-(b) can be rearranged as follows:

$$\text{EPS, Method II-(b)} = \frac{\text{NI} + ((\text{NI} / \text{CS}) (\text{EPW}) (\text{WS}) / \text{MPC})}{\text{CS} + \text{WS}}$$

Noting that the term  $((\text{EPW}) (\text{WS}) / \text{MPC})$  is the number of shares of common assumed to be purchased under the treasury stock method and substituting X for this term, Method II-(b) can be written

$$\text{EPS, Method II-(b)} = \frac{\text{NI} + ((\text{NI} / \text{CS}) (\text{X}))}{\text{CS} + \text{WS}}.$$

Similarly, the equation for Method III can be written

$$\text{EPS, Method III} = \text{NI} / (\text{CS} + \text{WS} - \text{X}).$$

Net income (NI) is a common term in the numerator of both equations. In Method II-(b) the assumed proceeds from warrants  $((\text{NI} / \text{CS}) (\text{X}))$  is added to net income (NI). There is no adjustment for warrant proceeds in the numerator of Method III. Therefore the numerator in Method II-(b) reflects an increase over the numerator of Method III of  $((\text{NI} / \text{CS}) (\text{X}) (100) / \text{NI})$  percent.

In the denominator the common term of both equations is the total number of shares outstanding after the assumed exercise of warrants (CS + WS). Under Method III the number of shares assumed purchased under the treasury stock method (X) is deducted from the total shares outstanding if warrants have been exercised (CS + WS). Since there is no adjustment to the denominator of Method II-(b), the denominator of Method III reflects a decrease over the denominator of Method II-(b)



of  $((X) (100) / (CS + WS))$  percent.

Method II-(b) will always produce greater earnings per share than Method III if the percentage of increase in the numerator  $((NI / CS) (X) (100) / NI)$  is greater than the percentage of decrease in the denominator  $((100) (X) / (CS + WS))$ . In other words, the term  $((NI / CS) (X) (100) / NI)$  must be greater than the term  $((X) (100) / (CS + WS))$ . By cancelling and rearranging terms, the percentage of increase in the numerator becomes  $((100) (X) / CS)$ , which will always be larger than the percentage of decrease in the denominator of  $((100) (X) / (CS + WS))$ . Method III, therefore, is always more dilutive than Method II-(b). Since Method II-(b) assumes that warrants earn at the earnings-price ratio and Method III always produces a lower earnings per share than Method II-(b), the conclusion is that the treasury stock method of computing fully diluted earnings per share assumes a rate of return on warrant proceeds that is less than the cost of common equity capital.

Method III fails to meet the guidelines for computing fully diluted earnings per share for the same reason as Method II-(b) because this method also assumes a rate of return on warrant proceeds which is based on the current market price of the common stock. As a result, this method fails to provide a dilution estimate in periods when the exercise price exceeds the common stock price. The rate of return assumed on warrant proceeds is even less than the price-earnings ratio assumed under Method II-(b). Consequently, the rate of return which high price-earnings ratio companies are assumed to earn on warrant proceeds is absurdly low. In addition, the rate of return varies inversely with the price of the common stock. Interperiod and intercompany comparisons are therefore

invalid because of variations in fully diluted earnings per share not related to the operations of the firm.

#### Method IV

Method IV is the method recommended by Graham and Dodd. It assumes that the warrants ". . . are equivalent to additional outstanding common shares with the same aggregate market value as that of the warrant issue."<sup>41</sup> The equation for computing fully diluted earnings per share under this method is:

$$\text{EPS} = \text{NI} / (\text{CS} + ((\text{MPW} / \text{MPC}) (\text{WS})))$$

where  $(\text{NI} / \text{CS}) > \text{EPS} > 0$ .

This method is similar to Method III in that the equation for computing fully diluted earnings per share does not specify a rate of return for warrant proceeds. It relates the market value of the warrant to the market value of the common stock in order to determine the equivalent common shares considered to be outstanding. This relationship differs from that of the treasury stock method which relates the theoretical or intrinsic value of the warrant (i.e., the difference between the market price of the common and the exercise price of the warrant) to the market value of the common.

Method IV results in an implied rate of return on warrant proceeds which is less than that assumed by Method II-(b) and less than or equal to the implied rate of Method III. Since the implied rate of return for Method III has already been demonstrated to be less than that

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<sup>41</sup>Benjamin Graham, David L. Dodd, and Sidney Cottle, Security Analysis: Principles and Technique (4th ed.; New York: McGraw-Hill Book Company, 1962), p. 227.

of Method II-(b), the preceding statement can be proved by showing that the implied rate of Method IV is equal to or less than the implied rate of Method III. Proof is offered in the following paragraphs that fully diluted earnings per share under Method IV is always less than or equal to fully diluted earnings per share under Method III.

The equation for computing fully diluted earnings per share under the treasury stock method is:

$$\text{EPS, Method III} = \text{NI} / (\text{CS} + (\text{WS} - ((\text{EPW}) (\text{WS}) / \text{MPC}))).$$

By factoring out the variable WS, the term  $(\text{WS} - ((\text{EPW}) (\text{WS}) / \text{MPC}))$  becomes  $((\text{WS}) (1 - \text{EPW} / \text{MPC}))$ . The term  $(1 - \text{EPW} / \text{MPC})$  is equivalent to  $((\text{MPC} - \text{EPW}) / \text{MPC})$  so that the revised equation for Method III becomes

$$\text{EPS, Method III, Revised} = \text{NI} / (\text{CS} + (((\text{MPC} - \text{EPW}) / \text{MPC}) (\text{WS}))).$$

The revised equation for Method III is in a form that is comparable with Method IV. The terms in both equations are identical except that the fraction for determining the equivalent shares resulting from outstanding warrants is  $((\text{MPC} - \text{EPW}) / \text{MPC})$  for Method III and  $(\text{MPW} / \text{MPC})$  for Method IV. The term  $(\text{MPC} - \text{EPW})$ , the difference between the market price of the common and the exercise price of the warrant, is the theoretical or intrinsic value of the warrant. The difference between the intrinsic value and the market value of the warrant, i.e., the difference in the two equations, is the premium at which the warrant is selling. This premium reflects the leverage advantage which the warrant offers the underlying common stock. The value of the premium approaches zero as the intrinsic value of the warrant increases and as the expiration

date of the warrant becomes imminent.

Since the market price of warrants will almost always be equal to or greater than their intrinsic value,<sup>42</sup> the numerator in the fraction for determining equivalent shares under Method IV will always be greater than or equal to the numerator for determining equivalent shares under Method III. Consequently the number of equivalent shares added to the common shares outstanding under Method IV will be equal to or greater than the equivalent shares under Method III. As a result, fully diluted earnings per share calculated under Method IV will be less than or equal to fully diluted earnings per share calculated under Method III. Thus the implied rate of return on warrant proceeds under Method IV is less than or equal to the implied rate of return under Method III and less than the earnings-price ratio of Method II-(b).

Although Method IV is an improvement over Method II-(b) and Method III in some respects, it also fails to comply fully with the guidelines for computing fully diluted earnings per share. Unlike Methods II-(b) and III, Method IV will reflect an estimate of dilution in every period in which warrants are outstanding. Since the implied earnings rate on warrant proceeds is either equal to or less than that of Method III, the amount of the dilution estimate is excessive for high price-earnings ratio companies. As with Methods II-(b) and III, the implied rate of return varies inversely with the price of the underlying common stock.

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<sup>42</sup>Arbitrageurs prevent warrants from selling below their intrinsic value for any appreciable length of time. For a discussion of arbitrageurs, see page 151.

Summary of Conformity of Various  
Methods to Guidelines

Table 26 presents a comparison of the conformity of the basic methods of computing fully diluted earnings per share to the guidelines formulated by this study for the computation of fully diluted earnings per share when the purpose is to estimate the dilution which may result from the exercise of warrants. Methods I, III, and IV can be discarded immediately for failure to meet the guidelines. Method I offers an objective method for computing fully diluted earnings per share by simply avoiding the problems of estimating a rate of return on warrant proceeds. The assumption of a zero rate of return on warrant proceeds is unreasonable because warrant proceeds can be readily invested in short-term securities until a more profitable project materializes.

Method III also offers a practical method of computing fully diluted earnings per share by indirectly avoiding the problem of estimating a rate of return on warrant proceeds. The purchase of treasury stock, however, is equivalent to some implied rate of return which will always be less than the current cost of common equity. As a consequence, this method overstates the dilution which will be experienced by high price-earnings ratio companies and, to some extent, understates the dilution of low price-earnings ratio companies. This method would not be a good estimator of actual dilution even if the corporation actually purchased treasury stock with warrant proceeds. The volatility of common stock prices would cause variability in the periodic earnings-per-share computations completely unrelated to the operations of the firm.

Table 26. A Comparison of the Conformity of Various Methods of Computing Fully Diluted Earnings per Share to the Guidelines for Computing Fully Diluted Earnings per Share When Warrants Are Outstanding

| Guidelines  | Methods <sup>a</sup>  |   |   |   |   |
|---|---|---|---|---|---|
|   | I   | II-(a)  | II-(b)  | III   | IV  |
| 1. Method should provide an estimate of actual dilution, if any, in every period warrants are outstanding.                          | Provides an estimate in every period whether or not actual dilution is incurred | Provides an estimate in every period in which cost of warrant capital exceeds selected rate of return on warrant proceeds | Provides an estimate in every period in which market price of common exceeds exercise price | Provides an estimate in every period in which market price of common exceeds exercise price | Provides an estimate in every period whether or not actual dilution is incurred     |
| 2. Method should reflect the best estimate, based on relevant variables, of actual dilution, if any; which will be incurred.        | Estimated amount of dilution is excessively high                                | Estimated amount of dilution is reasonable  | Estimated amount of dilution is excessive for high price-earnings ratio companies           | Estimated amount of dilution is excessive for high price-earnings ratio companies           | Estimated amount of dilution is excessive for high price-earnings ratio companies   |
| 3. Method of calculation should incorporate a realistic estimate of actual rate of return which will be earned on warrant proceeds. | Unrealistic; assumes zero rate of return  | Realistic; rate selected is one of several possible rates of return which might be earned on warrant proceeds             | Unrealistic; rate of return for high price-earnings ratio companies too low                 | Unrealistic; implied rate of return for high price-earnings ratio companies too low         | Unrealistic; implied rate of return for high price-earnings ratio companies too low |

Table 26 (continued)

| Guidelines  | Methods <sup>a</sup>                                |  |   |   |  |
|---|---|--|---|---|--|
|   | I   | II-(a)   | II-(b)  | III   | IV   |
| 4. Method should not incorporate a rate of return on warrant proceeds which introduces variability into earnings per share not related to the operations of the firm. | No variability because rate of return is a constant | Extent of variability not related to operations depends on rate of return selected | High variability in earnings per share caused by price volatility of common stock | High variability in earnings per share caused by price volatility of common stock | High variability in earnings per share caused by price volatility of common stock and warrants |

<sup>a</sup>The basic assumptions of each method are:

Method I - equivalent shares considered as outstanding with no credit given for earnings on warrant proceeds

Method II-(a) - equivalent shares considered as outstanding with credit given for earnings on warrant proceeds at an earnings rate determined from data independent of the corporation's own rate of return

Method II-(b) - equivalent shares considered as outstanding with credit given for earnings on warrant proceeds at a rate based on earnings of the corporation in relation to the current market price of its common stock; i.e., the earnings-price ratio

Method III - shares outstanding considered to include shares under option reduced to a portion based on the relationship of the exercise price of the warrant and the current market price of the common stock; i.e., the treasury stock method

Method IV - shares outstanding considered to include shares under option reduced to a portion based on the relationship of the market price of the warrant and the current market price of the common stock; i.e., the Graham and Dodd method.

Method IV also indirectly avoids the problem of estimating a rate of return on warrant proceeds by assuming additional common shares are outstanding based on the relationship of the market price of the warrant to the market price of the common stock. This method, advocated by Graham and Dodd, is not as practical as the treasury stock method, however, because the computation requires warrant prices which may not always be available. The implied rate of return assumed by this method is less than the cost of common equity and also less than or equal to the implied rate of the treasury stock method. Consequently the estimate of dilution for high price-earnings ratio companies is even more seriously overstated. As with the treasury stock method, fully diluted earnings per share varies inversely with the price of the common stock. Thus variability unrelated to the operations of the firm is introduced into fully diluted earnings per share.

Methods II-(a) and II-(b) both incorporate an estimated rate of return on warrant proceeds. Since the rate of return on warrant proceeds is the key variable<sup>43</sup> in determining the actual dilution, if any, which will be reflected in earnings per share when warrants are exercised, an analysis of these two methods may provide an appropriate rate of return for estimating dilution.

Method II-(a) employs a rate of return on warrant proceeds selected from data independent of the corporation's own rate of return.

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<sup>43</sup>Dilution of earnings per share occurs if the cost of the warrant capital (earnings per share of existing capital divided by the warrant exercise price) exceeds the rate of return on the warrant proceeds. The rate of return on warrant proceeds is termed the key variable because management has little control over the cost of warrant capital once warrants have been issued.



In other words, the assumption is that warrant proceeds are invested in securities of other corporations or governmental agencies. Investment of warrant proceeds in securities is one of several options available to management. Consequently Method II-(a) meets the guidelines better than any of the other methods considered. The principal fault with this method is that periodic changes in the interest or discount rate selected will cause variability in the estimated dilution which may not be related to the operations of the firm.

Whereas Method II-(a) employs a rate of return derived from sources external to the firm, Method II-(b) uses internal data of the firm as well as data from external sources. This rate, usually referred to as the cost of common equity, relates the firm's earnings per share to the current price of its common stock. This method therefore assumes that a firm can never invest warrant proceeds profitably because the cost of the warrant capital will always exceed the cost of common equity. This is true because the market price of the common must exceed the exercise price of the warrants for exercise to occur. Basing the rate of return on the current common stock price severely understates the rate of return which high price-earnings ratio companies may earn on warrant proceeds. Earnings per share is also subject to variability not related to the operations of the firm because of the volatility of common stock prices.

#### RECOMMENDED METHOD OF COMPUTING FULLY DILUTED EARNINGS PER SHARE

Both Methods II-(a) and II-(b) fail to meet the guidelines for computing fully diluted earnings per share because their rates of return

on warrant proceeds employ, in part at least, data external to the firm. Such rates exclude the possibility that the funds derived from the exercise of warrants will be employed internally in the operations of the firm. Under these circumstances warrant proceeds lose their separate identity because they are comingled with the other operating assets. The rate of return earned on the proceeds, therefore, is the rate of return earned, before interest and taxes, on average assets employed (hereinafter referred to as the operating rate of return).

The operating rate of return produces results which comply favorably with the guidelines for computing fully diluted earnings per share. This compliance with the guidelines is indicated by the following comparison:

1. An estimate of dilution is reflected in fully diluted earnings per share in every period in which the operating rate of return is exceeded by the cost of warrant capital. This method properly reflects no dilution in periods in which the operating rate of return exceeds the cost of warrant capital. Failure to reflect dilution is appropriate because the best estimate, based on the latest relevant data, is that no dilution of earnings per share will occur if warrants are exercised. This contrasts with Methods II-(b) and III which assume that no dilution will occur if the exercise price exceeds the market price of the common stock and with Methods I and IV which always assume that dilution will occur.

2. The amount of dilution which this method estimates is reasonable because the process of estimation is based on the relevant variables which determine actual dilution when warrants are exercised. This

contrasts with some of the other methods under consideration. Method I estimates excessive dilution because it assumes that warrant proceeds will produce no earnings. Method II-(b) overestimates dilution for high price-earnings ratio companies because it assumes that warrant proceeds cannot earn at a rate higher than the cost of equity capital. Method III's assumption that warrant proceeds will be used to purchase treasury stock produces results similar to Method II-(b), except that the dilution estimate is higher. Method IV produces dilution estimates similar to, but generally higher than, Methods II-(b) and III because it somehow assumes that dilution of earnings per share is a direct function of the market prices of the warrants and the related common stock.

3. Barring a requirement of the warrant agreement that warrant proceeds be utilized for a specific purpose, the operating rate of return is the most appropriate estimate of the rate of return which will be earned on warrant proceeds. As previously explained, warrant proceeds are likely to become a part of the firm's pool of assets used in operations. Under these circumstances, a specific rate of return applicable only to the proceeds cannot be determined. The operating rate of return will, however, reflect the benefits or detriments derived from the use of the funds. The operating rate of return, adjusted for tax effect, is preferable to the return on owner's equity because it eliminates the effects of leverage.

4. The operating rate of return injects no variability into earnings per share that is not the result of the operations of the firm. This is a major advantage that this method offers over some of the other methods considered. Methods II-(b), III, and IV cause earnings per share

to vary inversely with the price of the common stock because they incorrectly employ the common stock price as a variable in the dilution computation.

In addition to substantial conformity to the guidelines for computing fully diluted earnings per share, this method has the advantage of simplicity of calculation. All of the data necessary for the computation is readily available from the financial statements of the company and the warrant agreement.

The conclusion is that fully diluted earnings per share should be computed in accordance with the equations of Methods II-(a) or II-(b), except that the operating rate of return should be substituted for the rates specified in those equations. If, however, the warrant agreement specifies the use of proceeds, the appropriate rate of return is that which conforms to the terms of the agreement.

#### SUMMARY AND CONCLUSIONS

There is no one earnings-per-share figure appropriate for all investment decisions. As a minimum, two earnings-per-share figures should be reported for companies with warrants outstanding: (1) earnings per average common share and (2) fully diluted earnings per share. Earnings per average common share has validity for decisions which are affected by actual shares outstanding, as, for example, dividend payout estimates. Earnings per average common share may also be a useful tool for evaluating stock prices in short-term investment decisions if the expiration date of outstanding warrants is not imminent. Earnings per average common share, when reported with fully diluted earnings per

share, permits an investor to estimate the potential dilution in earnings per share that would occur if warrants were exercised. In addition, fully diluted earnings per share is appropriate for long-range stock evaluation purposes; i.e., for periods which encompass the expiration date of the warrants.

The concept of a primary earnings per share which includes essentially the same number of common stock equivalents for dilutive warrants as is included in fully diluted earnings per share is rejected. The inclusion of the dilutive effect of warrants in both earnings-per-share figures prevents the investor from estimating the amount of dilution. Further, the common stock equivalents used in computing primary earnings per share reflect neither the imminence nor likelihood of the ultimate exercise of warrants.

One reason for the Accounting Principles Board's adoption of primary earnings per share rather than earnings per average common share was the fear that the financial reporting services, because of space limitations, would publish only one earnings-per-share figure. Thus earnings per average common share, which reflects no potential dilution, would have been emphasized to the detriment of fully diluted earnings per share. Experience subsequent to the publication of APB Opinion No. 15 has shown this argument to be without merit. Most financial reporting services do publish both earnings-per-share-figures.

Once the decision is made that the dilutive effect of warrants should be reflected in fully diluted earnings per share, the problem of how to estimate the dilution arises. Various methods with differing assumptions and results complicate the problem. The purpose of this

study is to formulate guidelines which can be used to select the appropriate method. These guidelines were formulated by relating the attributes of earnings per share as used by investors to the characteristics of warrants. Briefly summarized, the guidelines are as follows:

1. The method selected should reflect the potential dilution of warrants in fully diluted earnings per share from the date of issuance to the date of exercise or expiration of the warrants.

2. The method selected should reflect the best possible estimate of the actual dilution which will be incurred if the warrants are exercised.

3. The method selected should incorporate a realistic estimate of the actual rate of return which will be earned on warrant proceeds. Dilution of earnings per share occurs only when the rate of return on warrant proceeds is exceeded by the cost of the warrant capital.

4. The method selected should not incorporate an estimated rate of return on warrant proceeds which causes variability in fully diluted earnings per share that is not the result of operating conditions experienced by the firm during each period.

None of the basic methods of computing fully diluted earnings per share of companies with warrants outstanding complies fully with these guidelines. Most of the methods fail to comply because they are based on variables external to the operations of the firm, such as common stock or warrant prices, which have no direct bearing on the actual amount of dilution which would be reflected in earnings per share if warrants were exercised. These variables, because of their high volatility, introduce an undesirable variability into fully diluted earnings

per share that is unrelated to the operating conditions experienced by the firm in each period.

The method which most fully complies with the guidelines for computing fully diluted earnings per share employs an operating rate of return which is derived from internal data of the firm. This method will reflect dilution in every period in which the cost of warrant capital exceeds the operating rate of return. The estimate of dilution which this method produces is reasonable because it utilizes the same variables that determine actual dilution when warrants are exercised. The actual rate of return earned on warrant proceeds may be impossible to determine because these proceeds usually become a part of the pool of assets used in the firm's operations. Under such circumstances, the operating rate of return must be considered a reliable estimator of the actual rate of return. An additional advantage of this method is that the operating rate of return will not introduce variability into fully diluted earnings per share that is unrelated to the operations of the firm.

The resulting fully diluted earnings-per-share figures provide interperiod and intercompany comparability. The conclusion is, therefore, that fully diluted earnings per share should be computed by this method.

## Chapter 6

### SUMMARY AND CONCLUSIONS

During the 1960's warrants to purchase common shares of the issuing corporation were frequently attached to debt and equity securities in order to facilitate the sale or exchange of these securities. These warrants presented a definite hazard to investors who purchased common shares of the issuing corporations because exercise of the warrants could result in a dilution of the corporations' book value, their earnings per share, and the market value of their shares as well as the voting power of the individual stockholders. In May, 1969 the American Institute of Certified Public Accountants adopted the treasury stock method of reflecting the potentially dilutive effect of warrants on earnings per share through the issuance of APB Opinion No. 15. The treasury stock method of computing the earnings per share of corporations with outstanding warrants makes the assumption that the corporation uses the funds obtained from the exercise of warrants to purchase treasury shares at the average price of the common shares during the period and/or at the current price of the shares at the end of the period. The Institute recognized that many corporations would not actually purchase treasury stock with warrant proceeds, but this method was adopted because it was a practical means of reflecting the potential dilution of warrants in earnings-per-share computations.

On a theoretical basis the treasury stock method has certain



disadvantages. While the treasury stock method makes no specific assumption about the rate of return earned on warrant proceeds, the use of this method results in an earnings rate on warrant proceeds which is less than the earnings-price ratio of the corporation. Such a rate is unrealistically low for corporations with high price-earnings ratios and perhaps overly optimistic for corporations with low price-earnings ratios. In addition, the treasury stock method causes the earnings per share of corporations with warrants outstanding to vary inversely with the price of the corporations' common stock.

The purpose of this study has been to evaluate, on a theoretical basis, several methods of reflecting the potential dilution of warrants in the earnings-per-share computations. The desirability of including the potentially dilutive effect of warrants in both primary and fully diluted earnings per share has also been considered. Guidelines for this evaluation of the earnings-per-share computations were developed through an analysis of: (1) the attributes of earnings per share that investors perceive to be useful in the evaluation of common stocks, (2) the characteristics of warrants which might affect earnings per share, and (3) the problems encountered by the Accounting Principles Board in its promulgation of APB Opinion No. 15. The methodology for achieving these objectives included a survey of the accounting, finance, and investment literature related to warrants and earnings per share. The earnings-per-share files of the American Institute of Certified Public Accountants were also examined. In addition, the characteristics of warrants listed on the American Stock Exchange between 1950 and 1972 were analyzed. A summary of the results of these investigations and of the conclusions reached follows.

## ATTRIBUTES OF EARNINGS PER SHARE

Prior to World War I few common stocks were considered to be quality investments. Investment decisions with regard to common stocks were made on the basis of a balance sheet analysis. Very few corporations included complete income statements in their annual reports and the financial press did not report earnings per share.

The acceptance of common stocks as investments began in the 1920's after the publication of E. L. Smith's study, Common Stocks as Long-Term Investments. Common stock valuation techniques shifted from an emphasis of the balance sheet to the income statement. More firms began publishing income statements, but generally these statements provided insufficient information for investment decision-making purposes. The financial services began publishing earnings-per-share statistics and investors, frustrated by inadequate accounting information, began to evaluate common stocks by estimating future earnings per share and applying an earnings multiple to the projected earnings.

The earnings-per-share statistics of the 1920's and 1930's were sometimes misleading because the method of calculation was not standardized. Accountants felt that common stock valuation techniques should not be based solely on earnings per share and refused to include earnings per share in the financial statements. Accountants finally recommended that earnings per share be included in the statement of income in December, 1966 with the publication of APB Opinion No. 9.

The earnings capitalization model developed in the 1920's continues to be the method most frequently used by practitioners today in the valuation of common stocks. The basic variable of this model is

earnings per share. Future earnings per share is estimated and a price-earnings multiplier or capitalization rate is applied to the estimate. Earnings per share is also frequently used in present value models in that future dividends are often estimated by applying a dividend payout ratio to estimated earnings per share.

The attributes of earnings per share which are important to the earnings capitalization model are:

1. The absolute amount of earnings per share. Current or estimated future earnings per share is one of the two inputs of the earnings capitalization model. The timing of the recognition of the potential dilution of warrants, as well as the estimate of the amount of potential dilution, affects this attribute.

2. The trend of earnings per share. The second variable in the earnings capitalization model, the earnings multiplier or capitalization rate, is influenced by the trend of earnings per share. Investors place a higher value on the earnings multiplier of companies which exhibit a high growth rate in earnings per share. The timing of the recognition of the potential dilution of warrants therefore affects the trend of earnings per share. The accuracy of the estimates of the potential dilution also affects the trend of earnings per share.

3. The variability of the trend of earnings per share. The earnings multiplier or capitalization rate is also influenced by the variability of the trend of earnings per share. Investors place a higher multiple on earnings with a stable growth rate. Estimates of the potential earnings attributable to warrant proceeds should not, therefore, introduce variability into the trend of earnings per share.

## THE CHARACTERISTICS OF WARRANTS

The characteristics of all warrants listed on the American Stock Exchange during the period from January 1, 1950 through December 31, 1971 were analyzed. The population selected consisted of 106 warrant issues (94 warrant series) by 90 companies. Fifty-six percent of the warrants were issued with other securities for the purpose of raising cash. Thirty percent were issued as part of the consideration for the securities of another corporation and 7 percent were issued in connection with reorganizations or recapitalizations. Four percent were issued as distributions to stockholders in addition to, or in lieu of, dividends.

Warrants do not appear to be used for the purpose of raising future equity capital. Instead, warrants are attached to other securities for the purpose of facilitating the sale or exchange of the securities with which they are issued. Warrants increase the total value of the security package and reduce the cash flow for interest or dividends. When warrants are distributed to stockholders as dividends, the purpose appears to be that of establishing a market for the warrants in order to increase their value as a merger currency.

The following characteristics of the warrants that were analyzed in this study appear to be of importance in the formulation of earnings-per-share computational guidelines of companies with outstanding warrants:

1. Warrants do not constitute legal common equity. Consequently, warrant holders do not participate in corporate management or receive dividends. Earnings-per-share statistics used in the calculation of dividend payout ratios should, therefore, exclude the effect of warrants.

2. Warrants are attached to other securities for the purpose of facilitating the sale or exchange of the securities rather than for the purpose of raising future equity capital. Management and current stockholders benefit through the sale or exchange of the securities on more favorable terms. These benefits are reflected in the financial statements from the inception of the transaction. The potential cost of these benefits through the dilution of the stockholders' equity should also be reflected in the financial statements. The inclusion of an estimate of this potential dilution in earnings per share is a logical means of apprising stockholders of the potential detriment which might occur if the warrants are exercised.

3. Investors purchase warrants for the leverage they offer over the underlying common stock. As a consequence, warrants are generally exercised during a brief span of time immediately preceding their expiration. Dilution of owner's equity and earnings per share, therefore, will usually not occur prior to the expiration date of the warrants.

4. Many warrant series expire with practically none of the warrants having been exercised. In such situations, earnings-per-share calculations which include an estimate of the potential dilution caused by the exercise of warrants will result in the understatement of earnings per share on a historical basis.

5. Warrants add more value to a security package when the ratio of the exercise price of the warrants to the market price of the underlying common stock on the date of issue is low. When this practice is followed, fewer warrants per unit of capital solicited can be offered. On the other hand, the likelihood that the warrants will be exercised

and cause dilution is increased because of the lower exercise price.

6. The potential dilution to earnings per share is increased when the ratio of the exercise price of the warrants to the price of the underlying stock on the date of issue is high because more warrants per unit of capital solicited must be offered. However, the probability of actual dilution is decreased because of the higher exercise price.

7. The relationship between the exercise price or the market price of the warrant and the market price of the underlying common stock has no effect on the number of warrants which will ultimately be exercised except during a brief span of time immediately prior to the expiration date of the warrants unless unusual circumstances intervene. Methods of estimating the dilution to earnings per share based on these price relationships therefore have questionable validity.

#### PROBLEMS ENCOUNTERED BY THE ACCOUNTING PRINCIPLES BOARD

The Accounting Principles Board developed the concept of residual securities in APB Opinion No. 9 in its first effort to resolve the problem of reporting the dilutive effect of convertible securities and options in earnings per share. A convertible security was residual if it derived a major portion of its value from its conversion rights. Securities which are classified as residual securities enter into the earnings-per-share computation. In addition, a supplementary pro forma earnings-per-share computation was recommended if outstanding convertible and option securities not classified as residual securities might result in the further dilution of earnings per share as computed under the residual concept. Practitioners, in their interpretation of the opinion, excluded

warrants from the residual category. The result was a noticeable increase in the use of warrants in order to avoid the detrimental effect on earnings per share.

The original intent of APB Opinion No. 15 was to provide more specific guidelines for the computation of earnings per share under the residual concept. However, a number of conflicts between practice and theory was encountered. The modifications necessary in order to make the residual concept operational resulted in a change of its name to the concept of common stock equivalents. The Accounting Principles Board encountered three principal areas of difficulty in its efforts to formulate guidelines for the computation of earnings per share when potentially dilutive convertible and options securities were outstanding. These problem areas were: (1) the restatement of earnings per share for changes in residual status, (2) anti-dilution, and (3) the use of funds from the assumed exercise of warrants.

The Board concluded that earnings per share should not be restated for changes in residual status because of the basically historical nature of earnings-per-share statistics. The comparability of the statistics with respect to convertible securities was improved with the abandonment of the relative value test under the residual concept in favor of a yield test at date of issue under the concept of common stock equivalents. The problem of the comparability of earnings per share with respect to warrants remains, however, because of the adoption of the treasury stock method for computing the common stock equivalents attributable to warrants. Under the treasury stock method earnings per share varies inversely with the price of the underlying common stock.

This problem was considered in the formulation of the guidelines for computing earnings per share which were recommended by this study.

Under the residual concept securities classified as residual could result in an enhancement of earnings per share. This enhancement of earnings per share was opposed by the Securities and Exchange Commission and by some members of the Accounting Principles Board so that under the concept of common stock equivalents, potentially dilutive securities were excluded from the computation if their inclusion would result in an increase in earnings per share or a decrease in net loss per share. The effect of this decision was to eliminate warrants, except under the 20 percent limitation, from the earnings-per-share computation during periods when the exercise price of the warrants was above the related common stock price. This failure of the treasury stock method to provide an estimate of the potential dilution of earnings per share in every period during which warrants are outstanding was a factor which influenced the recommendations of this study.

The Accounting Principles Board originally adopted the treasury stock method as a means of reflecting the potentially dilutive effect of warrants in earnings per share because of its simplicity of application. Subsequent modifications to the method complicated the calculations to the extent that simplicity of application is no longer an advantage. More importantly, the treasury stock method indirectly attributes a rate of return to the proceeds assumed to have been received from the exercise of the warrants that is always less than the earnings-price ratio of the company. Such a rate of return, in addition to introducing variability into earnings per share because of common stock price changes,



is unrealistic for companies with either very high or very low price-earnings ratios. This problem of an appropriate rate of return on warrant proceeds was also considered in the formulation of earnings-per-share computational guidelines.

### CONCLUSIONS

The two basic conclusions of this study are:

1. A minimum of two earnings per share figures for those companies having outstanding warrants should be provided to investors. Earnings per average common share should be based on the average shares outstanding during the period. Fully diluted earnings per share should include an estimate of the potential dilution of earnings per share which might occur if warrants were exercised.
2. The most appropriate method of reflecting the potentially dilutive effect of warrants in fully diluted earnings per share is the operating rate of return method, which assumes that warrant proceeds will earn at the current rate of return on assets. This conclusion was reached through an evaluation of various methods of computing the fully diluted earnings per share of companies with warrants outstanding. The evaluation of these methods was based on the guidelines which were developed during the course of this study.

The reasons for these conclusions are discussed in the following sections.

#### Exclusion of the Dilutive Effect of Warrants from Earnings per Common Share

APB Opinion No. 15 requires that the potentially dilutive effect

of warrants must be included in primary earnings per share as well as fully diluted earnings per share. This procedure should be rejected in favor of: (1) primary earnings per share based on legal common equity and (2) fully diluted earnings per share which includes the potentially dilutive effect of warrants. This conclusion can be defended on the following basis:

1. By providing two earnings-per-share figures, one of which assumes no dilution, the other of which assumes full dilution, an investor is given a basis of comparison which permits him to determine the full extent of the dilution which might occur through the exercise of warrants. APB Opinion No. 15 denies an investor this information.
2. The life span of warrants is considerably longer than an investor's time horizon. Earnings-per-share computations that assume no dilution are an appropriate tool for investment decisions during periods prior to the expiration date of the warrants.
3. Many warrant issues do not result in the dilution of earnings per share because they expire without exercise. Earnings per share computations that assume no dilution provide the investor with the appropriate information in such cases.
4. Dividend policy is best evaluated on the basis of earnings per share figures that assume no dilution because dividends are paid on the basis of legal capital.
5. The argument for including the dilutive effect of warrants in primary earnings per share because the financial reporting services, due to space limitations, would ignore fully diluted earnings per share has proved invalid. In fact, some corporate managements have emphasized

the fully diluted figure because this figure results in a higher price-earnings ratio.

Recommended Method for  
Including the Dilutive Effect  
of Warrants in Fully Diluted  
Earnings per Share

Guidelines for the evaluation of various methods of including an estimate of the dilutive effect of warrants in fully diluted earnings per share were formulated in this study. These guidelines were derived from: (1) the attributes of earnings per share which investors perceive to be useful in making investment decisions about common stocks, (2) the characteristics of warrants which might have a bearing on the earnings-per-share computation, and (3) an analysis of the problems encountered by the Accounting Principles Board in the promulgation of APB Opinion No. 15.

The method selected for the computation of the fully diluted earnings per share of companies with outstanding warrants should:

1. reflect the potential dilution of warrants from the date of issuance to the date of exercise or expiration,
2. provide the best possible estimate of the actual dilution which will be incurred if the warrants are exercised,
3. incorporate a realistic estimate of the rate of return which will be earned on warrant proceeds,
4. and not introduce variability into fully diluted earnings per share that is not the result of operating conditions experienced by the firm during each period.

These guidelines were used in the evaluation of various methods

of reflecting an estimate of the dilutive effect of warrants in fully diluted earnings per share. Three of these methods make the following assumptions with regard to earnings on warrant proceeds: (1) no return on warrant proceeds, (2) a return selected from data independent of the corporation's rate of return, and (3) a return equivalent to the earnings-price ratio of the firm. Two other methods which were evaluated make no direct assumptions about the rate of return earned on warrant proceeds. The treasury stock method provides an estimate of common stock equivalents based on the relationship of the exercise price of the warrants and the price of the underlying common stock. The Graham and Dodd method produces an estimate of common stock equivalents based on the relationship of the market price of the warrants and the price of the underlying common stock.

Each of the above methods was rejected because of a lack of compliance with one or more of the guidelines. The method which assumes no earnings on warrant proceeds produces excessive estimates of dilution because warrant proceeds could always be invested in income producing securities if more favorable company projects were not available. The method which most closely complies with the guidelines assumes an earnings rate independent of the corporation's own rate of return. The effect of the assumption is that funds are invested in income producing securities. This method was rejected because it would result in variability which is unrelated to operations due to the volatility of the external rate of return selected.

The earnings-price ratio, treasury stock, and Graham and Dodd methods failed to comply with the guidelines because these methods

produce unrealistic estimates of the rates of returns on warrant proceeds and inject variability into fully diluted earnings per share which is unrelated to the operation of the firm. Each of these methods produces excessively high estimates of dilution for high price-earnings ratio companies. These methods cause variability of fully diluted earnings per share because of the volatility of the common stock prices on which they are based.

The basic cause of the lack of compliance of the above methods to the guidelines is the fact that most of the methods incorporate external data into the calculation of fully diluted earnings-per-share. Calculations based on this external data introduce variability into the earnings-per-share figures which is unrelated to the operating conditions experienced by the firm during the period. This variability causes interperiod and intercompany comparisons of the earnings-per-share statistics to be misleading.

The preceding observations led to the conclusion that an internal rate of return should be applied to warrant proceeds in the calculation of fully diluted earnings per share. The dilution which will ultimately be reflected in earnings per share through the exercise of warrants is a function of the number of common shares outstanding prior to the exercise of the warrants, the number of common shares issued through the exercise of the warrants, the rate of return on assets existing prior to the exercise of the warrants, and the rate of return earned on the warrant proceeds. Stated another way, dilution of earnings per share will result from the exercise of warrants if the cost of the capital provided by the exercise of the warrants (earnings per share of existing assets

divided by the exercise price per share) exceeds the rate of return earned on the warrant proceeds. Thus, given the rate of return earned on warrant proceeds, the dilution to earnings per share caused by the exercise of warrants is easily calculated.

Warrant agreements, however, generally place no restrictions on the use of warrant proceeds. Consequently, funds received from the exercise of warrants become a part of the pool of corporate assets which may be used for any legitimate corporate purpose. Under these circumstances, the appropriate rate of return on warrant proceeds is the average rate of return on assets before interest and taxes (the operating rate of return).

The operating rate of return, net of tax effect, produces results that conform closely to the guidelines for computing fully diluted earnings per share. This conformity is shown in the following comparison:

1. An estimate of dilution will be reflected in every period in which the cost of the warrant capital exceeds the operating rate of return. No dilution will be reflected in those periods when the operating rate of return is greater than the cost of the warrant capital. No dilution should be reflected in these periods because the status of the relevant variables indicates that no dilution will be incurred when the warrants are actually exercised.

2. The amount of dilution estimated by this method is a reasonable approximation of the actual dilution which will be incurred if the warrants are exercised because the estimation process utilizes the relevant variables which determine the actual dilution, if any, when warrants are exercised.

3. The operating rate of return is an appropriate estimator of the actual rate of return which will be earned on warrant proceeds. Unless the warrant agreement requires that warrant proceeds be employed for a specific purpose, warrant proceeds are comingled with other corporate funds and the determination of a specific rate applicable to the warrant proceeds becomes impossible.

4. The operating rate of return injects no variability into fully diluted earnings per share that is not the result of the operations of the firm.

In conclusion, fully diluted earnings per share which includes an estimate of the dilutive effect of warrants computed by the operating rate of return method will provide investors with an earnings-per-share statistic that is comparable over time and among companies. This statistic, in combination with earnings per common share, provides investors with meaningful information for making decisions related to the common stock of companies with outstanding warrants.

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## VITA

Julian Denis Smith, the son of Wilburn Travis and Mary Gladys McVay Smith, was born in Enterprise, Louisiana on September 11, 1925.

He received his elementary and secondary education in the Caldwell Parish public school system and graduated from Columbia High School in May, 1942. In September, 1942, he entered Northeast Junior College of Louisiana State University and Agricultural and Mechanical College in Monroe, Louisiana. In December, 1943 he resigned to enter the United States Navy. He returned to Northeast Junior College in September, 1946 after having served as a commissioned officer in the Navy Supply Corps. In September, 1947 he entered Louisiana State University and Agricultural and Mechanical College in Baton Rouge, Louisiana. He was graduated in June, 1949 with the degree of Bachelor of Science in accounting.

Upon graduation, he accepted a position as accountant with Creole Petroleum Corporation in Caracas, Venezuela. In September, 1956 he joined the staff of Main and Company, Certified Public Accountants, in Houston, Texas. He became a certified public accountant in the state of Texas in January, 1961 and in the state of Louisiana in January, 1964.

In September, 1963 he enrolled in the Graduate School of Louisiana State University. He received the degree of Master of Science in accounting in January, 1965. Upon completion of course work for the Doctor of Philosophy degree in accounting, he accepted a position as assistant professor of accounting at Louisiana State University in New Orleans.


## EXAMINATION AND THESIS REPORT

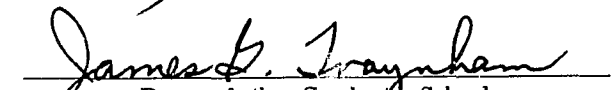
Candidate: Julian Denis Smith

Major Field: Accounting

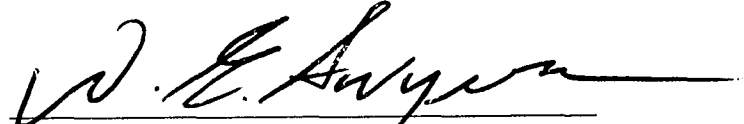
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Regarding the Use of Warrant Proceeds on Earnings-Per-  
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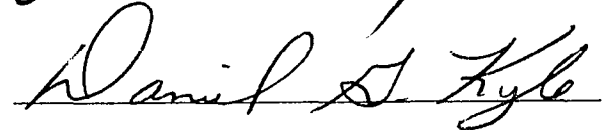
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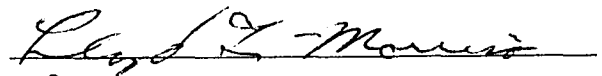
  
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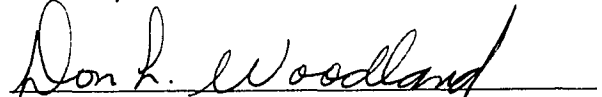
  
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### EXAMINING COMMITTEE:









Date of Examination:

April 3, 1975